PB-230 784

WATER POLLUTION CONTROL RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS - 1968 GRANT AND CONTRACT AWARDS

Federal Water Pollution Control Administration
Washington, D. C.

1968

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WATER POLLUTION CONTROL

RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS

1968 GRANT AND CONTRACT AWARDS

RESEARCH GRANTS
RESEARCH CONTRACTS
DEMONSTRATION GRANTS
STORM AND COMBINED SEWER GRANTS
STORM AND COMBINED SEWER CONTRACTS
ADVANCED WASTE TREATMENT GRANTS
ADVANCED WASTE TREATMENT CONTRACTS
INDUSTRIAL WASTE TREATMENT GRANTS
INDUSTRIAL WASTE TREATMENT CONTRACTS
TRAINING GRANTS
RESEARCH FELLOWSHIPS

U. S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
OFFICE OF RESEARCH AND DEVELOPMENT
WASHINGTON, D. C. 20242

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FORWARD

Section 5 and 6 of the Federal Water Pollution Control Act, Public Law 660, as amended, authorizes the award of grants and contracts for research, development and demonstration projects. Five types of projects are available.

Research Grants and Contracts are awarded to public or private agencies, institutions, and to individuals to assist in supporting basic and applied research projects relating to the causes, control, and prevention of water pollution. They support projects directed toward the discovery and development of new information and technology in the chemical, physical, biological, and social sciences, in engineering, and in administrative aspects related to:

1. Identification of pollutants
2. Fate and persistence of pollutants
3. Effects of pollutants on water uses
4. Treatment processes
5. Non-treatment methods of pollution control
6. Ultimate disposal of pollutants

Demonstration Grants and Contracts are awarded to public or private agencies, institutions, and to individuals to assist in investigations and studies of an applied nature, and to develop and demonstrate the feasibility of new methods related to the causes, control, and prevention of water pollution. They are designed to evaluate the application of research findings, and to expedite incorporation of new knowledge into routine pollution control practice.

Storm and Combined Sewer Grants are awarded to states and interstate agencies, municipalities and intermunicipal agencies whereas Storm and Combined Sewer Contracts are awarded to public or private agencies, institutions, and to individuals. Both grants and contracts are designed to assist projects which will develop and/or will demonstrate a new or improved method of controlling the discharge into any waters of untreated or inadequately treated sewage or other wastes from sewers which carry storm water or both storm water and sewage or other wastes.

Advanced Waste Treatment Grants are awarded to states and interstate agencies, municipalities, and intermunicipal agencies, whereas Advanced Waste Treatment Contracts are awarded to public and private agencies, institutions, and to individuals. These projects are designed to assist in the development and/or demonstration of advanced waste treatment and water purification methods (including the temporary use of new or improved chemical additives which provide substantial immediate improvement in existing treatment processes), or new or improved methods of joint treatment systems for municipal and industrial wastes.

Industrial Waste Treatment Grants and Contracts are awarded to public and private agencies, institutions, and to individuals to support research and demonstration projects for the prevention of pollution of waters by industry, including, but not limited to, treatment of industrial wastes.

To obtain details concerning the above awards and to request forms for the submission of applications, write to:

Project Coordination
Office of Research and Development
U. S. Department of the Interior
Federal Water Pollution Control Administration
Washington, D. C. 20242

Training Grants and Research Fellowships are authorized in Section 5 of the Federal Water Pollution Control Act, Public Law 660 as amended. The purposes of these grants are to encourage cooperation with, and to assist appropriate agencies, instutitions, and individuals in the conduct of training relating to the causes, control and prevention of water pollution.

To obtain details concerning these awards and to request forms for the submission of applications, write to:

Division of Manpower and Training
Office of Operations
Training Grants Branch
U. S. Department of the Interior
Federal Water Pollution Control Administration
Washington, D. C. 20242

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Title VI of the Civil Rights Act of 1964 states:

"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving Federal financial assistance." Therefore, the Office of Research and Development of the Federal Water Pollution Control Administration, like every program or activity receiving financial assistance from the Department of the Interior, must be operated in compliance with this law.

WATER POLLUTION CONTROL

RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS

1968 GRANT AND CONTRACT AWARDS

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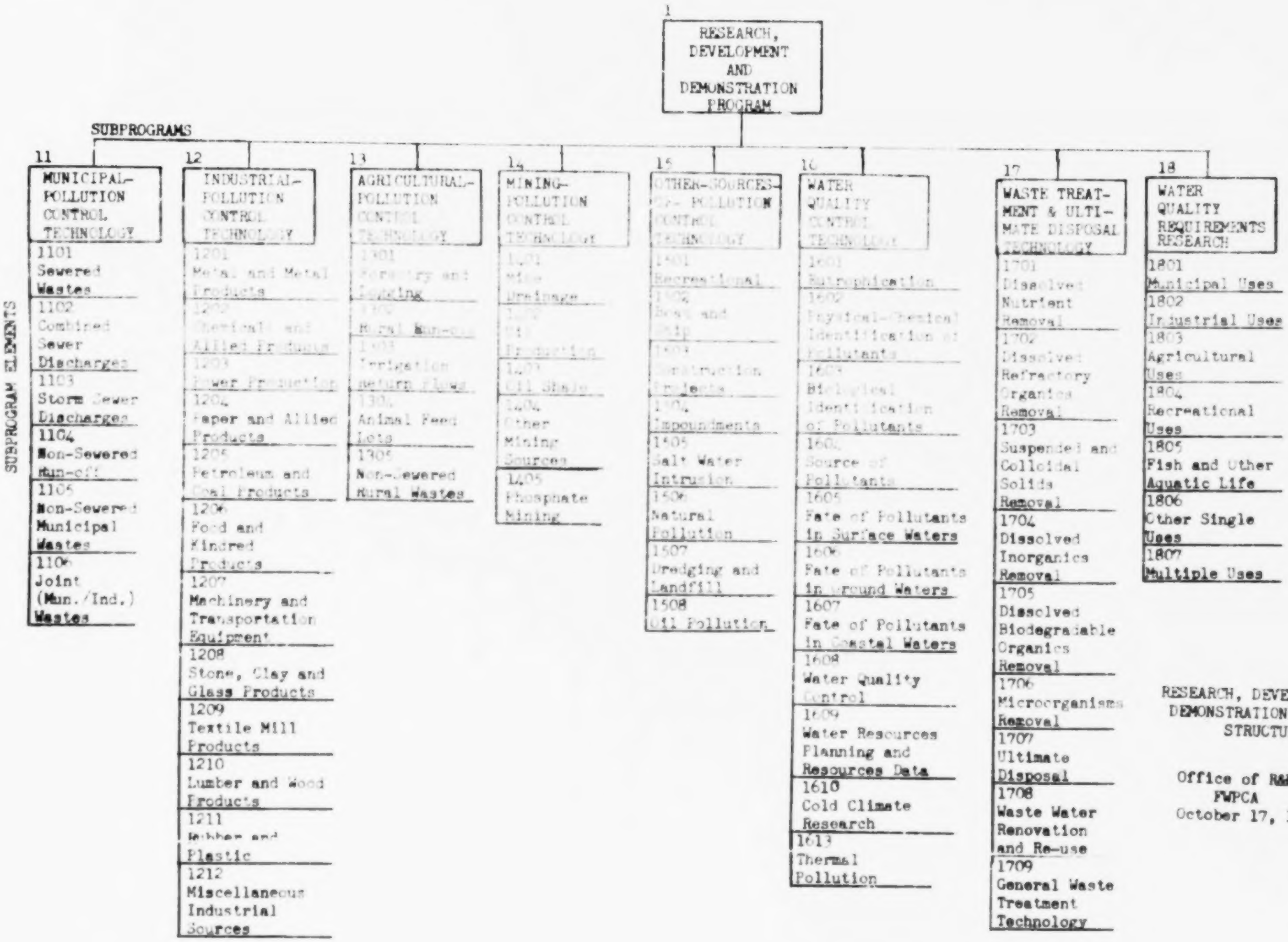
WATER POLLUTION CONTROL

RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS

SUMMARY OF AWARDS

FISCAL YEAR 1968

Projects	Projects Awarded	Amount Awarded
Research Grants	212	$6,359,354
Research Contracts	64	4,259,212
Demonstration Grants	49	2,240,262
Storm & Combined Sewer Grants	6	3,530,992
Storm & Combined Sewer Contracts	24	5,275,059
Advanced Waste Treatment Grants	22	5,389,620
Advanced Waste Treatment Contracts	4	668,141
Industrial Waste Treatment Grants	34	7,311,581
Industrial Waste Treatment Contracts	2	335,847
Training Grants	84	3,364,997
Research Fellowships	113	632,991
ALL PROJECTS	614	$39,368,056



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      - 1203 Power Production
      - 1204 Paper and Allied Products
      - 1205 Petroleum and Coal Products
      - 1206 Food and Kindred Products
      - 1207 Machinery and Transportation Equipment
      - 1208 Stone, Clay and Glass Products
      - 1209 Textile Mill Products
      - 1210 Lumber and Wood Products
      - 1211 Rubber and Plastic
      - 1212 Miscellaneous Industrial Sources
    - 13 AGRICULTURAL-POLLUTION CONTROL TECHNOLOGY
      - 1301 Forestry and Logging
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      - 1304 Animal Feed Lots
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RESEARCH, DEVELOPMENT AND
DEMONSTRATION PROGRAM
STRUCTURE

Office of R&D
FWPCA
October 17, 1968

WATER POLLUTION CONTROL

RESEARCH GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATES

State	Institutions and Agencies	Number Awarded	Amount Awarded
Alabama	1	2	$ 27,358
Alaska	1	4	129,629
Arizona	1	1	5,577
Arkansas	1	1	18,166
California	9	19	536,297
Colorado	1	1	30,779
District of Columbia	2	2	28,652
Florida	4	10	342,238
Georgia	2	3	135,590
Illinois	4	9	255,986
Indiana	2	3	59,555
Iowa	2	[illegible]	66,784
Kansas	3	4	66,107
Kentucky	1	1	16,682
Maine	2	3	82,095
Maryland	2	3	93,426
Massachusetts	5	12	390,375
Michigan	3	11	329,980
Minnesota	3	8	237,788
Mississippi	1	2	30,541
Missouri	1	3	85,087
Montana	2	2	43,440
Nevada	1	1	37,450
New Hampshire	1	1	39,397
New Jersey	1	1	101,806
New Mexico	2	2	46,065
New York	8	17	488,035
North Carolina	2	2	83,261
Ohio	5	8	164,592
Oklahoma	1	1	29,409
Oregon	1	12	378,440
Pennsylvania	6	9	343,405
Rhode Island	1	4	52,954
South Carolina	1	1	19,909
Tennessee	2	6	220,909
Texas	5	11	272,196
Utah	2	3	195,370
Virginia	1	2	59,154

WATER POLLUTION CONTROL

RESEARCH GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATES (Cont'd)

State	Institutions and Agencies	Number Awarded	Amount Awarded
Washington	3	17	$ 523,139
West Virginia	1	1	3,068
Wisconsin	1	4	254,928
Foreign	2	2	33,735
41 States	100	212	$ 6,359,354

Active Research Grants 1968

2	Foreign Countries
32	States
67	Institutions and Agencies
112	Grants

WATER POLLUTION CONTROL

RESEARCH GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 5 OF THE FEDERAL WATER POLLUTION ACT, AS AMENDED

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
ALABAMA				
Auburn University Auburn				
Funderburk, H. Hanly, Jr. Ph.D. Botany and Plant Pathology Dept.	Effect of Herbicides on an Aquatic Environment	WP-00636-04S1	1805	$ 937
Funderburk, H. Hanly, Jr. Ph.D. Botany and Plant Pathology Dept.	Effect of Herbicides on an Aquatic Environment	WP-00636-05	1805	26,421
ALASKA				
University of Alaska College				
Birkholz, Norman J., Ph.D. Dept. of Chemistry and Chemical Engineering	Organic Compounds in Alaska Permafrost Groundwater	WP-01018-02	1606	18,964
Button, D. K., Ph.D. Institute of Marine Science	Biological Effects of Heavy Metal Pollution	WP-01240-01	1805	29,607
Dugdale, Vera A., Ph.D. Institute of Marine Science	Dynamics of the Nitrogen Cycle in Lakes	WP-00422-05S1	1601	4,950

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
ALASKA				
University of Alaska College				
Dugdale, Vera A., Ph.D. Institute of Marine Science	Dynamics of the Nitrogen Cycle in Lakes	WP-00422-06	1601	$ 46,272
Goering, John J., Ph.D. Institute of Marine Science	Ecology and Nitrogen Cycle in a Marine Plant Community	WP-01246-01	1805	29,836
ARIZONA				
University of Arizona Tucson				
Bier, Milan, Ph.D. Dept. of Agricultural Biochemistry	Water Purification by Large Scale Electrophoresis	WP-00783-03	1704	______*
McConnell, William J., Ph.D. Arizona Cooperative Fishery Unit	Limnological Effects of Organic Watershed Litter	WP-01015-02	1506	5,577
ARKANSAS				
University of Arkansas Fayetteville				
Testerman, Maurice K., Ph.D. Graduate Institute of Technology	A Continuous Multiparameter Water Quality Monitor	WP-00044-07	1608	18,166

*Active in FY 1968-Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
California Institute of Technology Pasadena				
Brooks, Norman H., Ph.D. W. M. Keck Laboratory	Dispersion in Hydrologic and Coastal Environments	WP-01256-01	1607	—*
Brooks, Norman H., Ph.D. W. M. Keck Laboratory	Dynamics of Density-Stratified Ground Water Flow	WP-00680-03S1	1606	—*
McKee, Jack E., Ph.D. Dept. of Environmental Health	Mycological Phenomena in Sewage Spreading Basins	WP-00988-02	1606	—*
Morgan, James J., Ph.D. Div. of Engineering and Applied Science	The Chemistry of Manganese in Natural Waters	WP-00941-03	1602	37,297
North, Wheeler J., Ph.D. W. M. Keck Laboratory	Marine Waste Disposal and Sea Urchin Ecology	WP-00697-04	1805	63,454
Los Angeles State College Foundation Los Angeles				
Anderson, Dean A., Ph.D. Dept. of Microbiology and Public Health	Bacteriology of Biodegradable Surfactants	WP-00961-03	1705	9,675
Ludwig Engineering and Science Research Foundation Arcadia				
Ludwig, Harvey F. President	Floc Strength and Filterability of Pre-Treated Water	WP-00813-02S1	1703	12,363

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
Sacramento State College Foundation Sacramento				
Kerri, Kenneth D., Ph.D. School of Engineering	Complementary-Competitive Aspects of Water Storage	WP-01008-02	1609	____*
San Diego County San Diego				
England, Beatrice L., A.B. San Diego Public Health Laboratory	Quantitative Virologic Studies of Sewage	WP-01198-01	1706	____*
Stanford University Stanford				
Franzini, Joseph B., Ph.D. Dept. of Civil Engineering	Further Studies of Infiltration	WP-00246-07	1606	28,988
Linsley, Ray K.,B.S. Civil Engineering Dept.	Effects of Water Pollution in San Francisco Bay	WP-01194-01	1608	944
McCarty, Perry L., Sc.D. Dept. of Civil Engineering	Algal Degradation in Waterways	WP-01037-02	1601	25,950
McCarty, Perry L., Sc.D. Dept. of Civil Engineering	Pesticides Distribution and Degradation in Waterways	WP-00715-03	1602	____*
University of California Berkley				
Fuerstenau, Douglas W., Sc.D. Dept. of Mineral Technology	Adsorption of Alkylaryl Surfactants on Polar Solids	WP-00692-03	1702	____*

*Active in FY 1968 - Supported by funds awarded in previous years

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
University of California Berkley				
Goren, Simon L., D. Eng. Dept. of Chemical Engineering	Preparation of Monodisperse Emulsions	WP-01068-02	1702	22,057
Jenkins, David I., Ph.D. Dept. of Civil Engineering	Transient Loading Effects in the Activated Sludge Process	WP-00787-04	1703, 1705 1706	36,834
Kaufman, Warren J., Sc.D. Div. of Hydraulic & Sanitary Engineering	Orthokinetic Flocculation of Heterodispersed Systems	WP-00658-04	1703	30,235
McGauhey, Percy H., M.S. Sanitary Engineering Research Laboratory	Soil Mantle as a Waste Water Treatment System	WP-00764-02S1 WP-00764-02S2	1709	______*
McGauhey, Percy H., M.S. Sanitary Engineering Research Laboratory	Economic Evaluation of Water Quality	WP-00597-05	1609	25,859
Oswald, William J., Ph.D. Insitute of Engineering Research	Nutritional and Disease Transmitting Potential of Sewage Grown Algae	WP-00026-05S1	1701	______*
Oswald, William J., Ph.D. School of Public Health	Kinetics of Algal Systems in Waste Treatment	WP-00975-01A1	1701, 1705	461
Oswald, William J., Ph.D. School of Public Health	Kinetics of Algal Systems in Waste Treatment	WP-00975-02	1701, 1705	42,558
Pearson, Erman A., Sc.D. Div. of Hydraulic and Sanitary Engineering	Reaction Kinetics of Anaerobic Fermentation Systems	WP-00830-03	1707	______*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
University of California at Davis				
Biggar, James W., Ph.D. Dept. of Water Science and Engineering	Sorption and Movement of Polluted Water in Soil	WP-00031-07	1506	$ 27,707
Goldman, Charles R., Ph.D. Dept. of Zoology	Limnology of Lake Tahoe Emphasizing Water Quality	WP-01188-01	1805	______*
Smith, Joe M., Sc.D. Dept. of Chemical Engineering	Photochemical Reaction in Water and Air Pollution	WP-00952-02	1702	______*
Watt, Kenneth E.F., Ph.D. Dept. of Zoology	Effects of Cover in Aquatic Predator-Prey Systems	WP-00929-02	1805	______*
University of California at Irvine				
Scherfig, Jan W., Ph.D.	Effect of Phosphorus Removal Processes on Algal Growth	WP-01446-01	1601	24,596
University of California at Los Angeles				
Bush, Albert F., Ph.D. Dept. of Engineering	Tertiary Treatment in the Purification of Wastewater	WP-01321-01	1708	27,472
Graves, Glenn W., Ph.D. Graduate School of Business	A Mathematical Model for Regional Treatment of Water Pollution Systems	WP-01210-02	1609	34,159
University of the Pacific Stockton				
Smith, Edmund H., Ph.D. Pacific Marine Station	Environmental Biology of Tomales Bay	WP-01061-01S1 WP-01061-02	1601	______*

*Active in FY 1968 - Supported by funds awarded in previous years.

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
University of Southern California Los Angeles				
Foxworthy, James E., Ph.D. Allan Hancock Foundation	Eddy Diffusion and Bacterial Reduction in Waste Fields	WP-00931-03	1605	$ 45,457
Tibby, Richard B., Ph.D. Allan Hancock Foundation	Ultraviolet Absorption in Coastal Waters	WP-00762-04	1607	40,231
COLORADO				
Colorado State University Fort Collins				
Everhart, Harry W., Ph.D. Dept. of Fishery and Wildlife Biology	Effects of Chemical Variations in Aquatic Environments	WP-01398-01	1805	30,779
Hanan, Joe, J., Ph.D. Dept. of Horticulture	Irrigation Regimes for Water Conservation	WP-00780-03	1303	______*
Simons, Daryl B., Ph.D. Engineering Research Center	XII IAHR Congress and International Hydrologic Symposium	WP-01123-01	1606	______*
University of Colorado Boulder				
West, Ronald E., Ph.D. Dept. of Chemical Engineering	The Effect of Porous Structure on Carbon Activation	WP-00853-03	1702	______*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CONNECTICUT				
University of Connecticut Storrs				
Collins, Ralph P., Ph.D. Department of Botany	Study of Microorganisms Inducing Tastes and Odors in Water	WP-00035-06	1801	______*
Trainor, Francis R., Ph.D. Dept. of Botany	A Study of Scenedesmus Species in Culture	WP-00850-03	1805	______*
DISTRICT OF COLUMBIA				
Individual				
Levine, Benjamin S., Ph.D. Washington	USSR Literature On Water Supply and Pollution Control	WP-00305-09	1608	10,725
The Catholic University of America Washington				
Bruck, Stephan D., Ph.D. Dept. of Chemical Engineering	Sorption Behavior of Organic Pyropolymers in Aqueous Solution	WP-01371-01A1	1702	17,927
Water Pollution Control Federation Washington				
Fuhrman, Ralph E., **D. Eng.** Executive Secretary	Research Supplement-Journal Water Pollution Control Federation	WP-01125-01A1	1609	______*
FLORIDA				
Individual				
Lackey, James B., Ph.D. Melrose	Taxonomy and Ecology of Inshore Marine Microbiota	WP-00901-04	1805	7,998

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
FLORIDA				
Florida State University Tallahasse				
Menzies, Robert J., Ph.D. Dept. of Oceanography	Distribution of Life with Depth	WP-01327-01	1805	$ 38,790
University of Florida Gainsville				
Brezonik, Patrick L., M.S. Earle B. Phelps Laboratory	Chemistry of Nitrogen in Natural Waters	WP-01203-01	1601	32,582
Calaway, Wilson T., B.S. Dept. of Entomology	Nematodes in Sewage Treatment and their Significance	WP-00508-05	1706	________*
Dean, Robert G., Sc.D. Dept. of Coastal and Oceanographic Engineering	Transversal Drifts in Bottom Profile	WP-00889-03	1607	24,853
Putman, Hugh D., Ph.D. Phelps Laboratory for Bioenvironmental Engineering Research	Primary Production and Decomposition in Estuarine Water	WP-00678-04	1601	29,640
Pyatt, Edwin, E., Ph.D. Dept. of Bioenvironmental Engineering	A Model for Quantifying Flow Augmentation Benefits	WP-01050-02	1609	37,216
Singley, John E., Ph.D. Dept. of Environmental Engineering	Stoichiometry and Mechanisms of Coagulation	WP-01261-01	1701, 1703	________*
Smith, Paul H., Ph.D. Dept. of Bacteriology	Studies on the Methogenic Bacteria in Sludge	WP-00198-08	1707	31,998

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
FLORIDA				
University of Miami Coral Gables				
Bader, Richard G., Ph.D. Institute of Marine Sciences	Effects of Thermal Pollution on Biota of Biscayne Bay	WP-01351-01A1	1613-1805	$64,312
Lane, Charles E., Ph.D. Institute of Marine Sciences	Effects of Pesticides on Marine Animals	WP-01326-01	1805	39,599
Moore, Hilary B., Ph.D. Institute of Marine Science	The Biology of the Infauna of a Tropical Soft Bottom Area	WP-00573-05	1805	35,250
Wood, Edward, J.F., Sc.D. Institute of Marine Science	Periphyton of the Everglades an Unpolluted System	WP-00709-03	1805	______*
GEORGIA				
Georgia Institute of Technology Atlanta				
Carstens, Marion R., Ph.D. Hydraulics Laboratory	Diffusivity of Particles in a Turbulent Field	WP-00912-02	1703	______*
Gates, William E., Ph.D. School of Civil Engineering	Relative Merits of Activated Sludge Design Models	WP-01133-01	1705	______*
Ingols, Roberts S., Ph.D. Engineering Experiment Station	Digestion of Sludges with Sodium Chloride and Sulfate	WP-01375-01	1707	20,625

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
GEORGIA				
Georgia Institute of Technology Atlanta				
Tsivoglou, Ernest C., Ph.D. School of Civil Engineering	Characterization of Stream Reaeration Capacity	WP-01366-01	1605	$ 84,413
Georgia State College Atlanta				
Singley, John E. Dept. of Chemistry	Stoichiometry and Mechanisms of Coagulation	WP-00717-03	1701	________*
University of Georgia Athens				
Hendricks, Charles W., Ph.D. Dept. of Microbiology	Enteric Bacterial Degradation of Stream Detritus	WP-01517-01	1605	30,552
ILLINOIS				
Eastern Illinois University Charleston				
Durham, Leonard, Ph.D. Department of Zoology	Biological Survey of Streams of Coles County	WP-01114-02	1805	20,510
Whitley, L. Stephen, Ph.D. Dept. of Zoology	The Systematics of the Tubificids of Illinois	WP-00937-02	1805	________*
Illinois Institute of Technology Chicago				
Grieves, Robert B., Ph.D. Dept. of Civil Engineering	Foam Separation Flotation of Colloid Organic Systems	WP-00702-03	1702, 1703	________*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
ILLINOIS				
Illinois Institue of Technology Chicago				
Gurnhan, C. Fred, Ph.D. Dept. of Environmental Eng.	Use of Coagulation in the Flotation of Wastewater	WP-01268-01	1703	$ 29,188
Kintner, Robert C., Ph.D. Dept. of Chemical Engineering	Effects of Surfactants on Fibrous Bed Coalescing	WP-01021-02	1702	28,560
Martell, Arthur E., Ph.D. Dept. of Chemistry	Permanganate Oxidation of Phenols and Aromatic Amines	WP-00744-03	1702	______*
Northwestern University Evanston				
Pipes, Wesley O., Ph.D. Dept. of Civil Engineering	Ecology of Sphaerotilus in Activated Sludge	WP-00588-04	1703 1705 1706	47,567
University of Illinois Urbana				
Austin, John H., Ph.D. Dept. of Civil Engineering	Oxygen Relationships in Small Streams	WP-01020-02	1605	52,582
Austin, John H., Ph.D. Dept. of Civil Engineering	Oxygen Relationships in Small Streams	WP-01020-02S1(S)3	1605	4,425
Dick, Richard I., Ph.D. Dept. of Civil Engineering	Mechanisms of Sludge Thickening	WP-01011-02	1707	29,092
Engelbrecht, Richard S., Sc.D. Dept. of Civil Engineering	Factors Influencing Free-Living Nematodes in Water	WP-00047-06	1805	______*
Larson, Thurston E., Ph.D. Dept. of Chemistry	Corrosion and Tuberculation in Distribution Systems	WP-00132-12	1801	16,552

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
ILLINOIS				
University of Illinois Urbana				
Quinn, John A., Ph.D. Dept. of Chemistry and Chemical Engineering	Mass Transfer through Interfaces	WP-00601-04	1704	____*
Sollo, Frank W., Jr., Ph.D. State Water Survey	Disinfection of Sewage Effluents	WP-01252-01	1706	27,510
Speece, Richard E., Ph.D. Dept. of Civil Engineering	Controlling Factors in Methane Fermentation	WP-00394-04S1	1707	____*
INDIANA				
DePauw University Greencastle				
Gammon, James R., Ph.D. Dept. of Zoology	The Effects of Inorganic Sediment on Stream Ecosystems	WP-01044-02	1805	7,070
Purdue Research Foundation West Lafayette				
Greenkorn, Robert A., Ph.D. School of Chemical Engineering	Dispersion During Flow is Heterogeneous Porous Media	WP-01048-02	1606	16,408
Kirsch, E. J., Ph.D. Dept. of Microbiology	Microbial Ecology and Interactions in Anaerobic Digestion	WP-00760-04	1707	36,077

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
INDIANA				
Purdue University Lafayette				
Bloodgood, Don E. Dept. of Civil Engineering	Foreign Engineers and Scientists to Purdue Industrial Waste Conference	WP-00861-02	1200	______*
IOWA				
Iowa State University Ames				
Dodd, John D., Ph.D. Dept. of Botany and Plant Pathology	Ecology of Diatoms in Hard-water Habitats	WP-00221-08	1805	9,034
Morgan, Paul E. Dept. of Civil Engineering	Design Requirements for Municipal Diatomite Filters	WP-00196-08	1703	17,633
University of Iowa Iowa City				
Macagno, Enzo O., Ph.D. Institute of Hydraulic Research	Dispersion of Water Pollutants in Curvilinear Flows	WP-01218-01	1605	40,117
KANSAS				
Kansas State Teachers College Emporia				
Prophet, Carl W., Ph.D. Dept. of Biology	Limnology of John Redmond Reservior, Kansas	WP-00615-05	1305	10,213

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
KANSAS				
Kansas State University Manhattan				
Fan Liang-Tseng, Ph.D. Dept. of Chemical Engineering	Optimal Design of Waste Treatment Systems	WP-01141-02	1709	$ 31,755
Lambert, Jack L., Ph.D. Dept. of Chemistry	Determination of Ammonia	WP-00235-06	1602	——*
Lambert, Jack L., Ph.D. Department of Chemistry	Ligand Exchange Reagents	WP-00326-07	1602	9,794
University of Kansas Lawrence				
Loehr, Raymond C., Ph.D. Dept. of Civil Engineering	Aerobic Microbial Degradation of Lipids	WP-00341-05	1707	——*
O'Brien, Walter J., Sc.d. Environmental Health Laboratory	Oxygen Consumption in Continuous Biological Culture	WP-01023-02	1705	14,340
KENTUCKY				
University of Kentucky Lexington - (Research Foundation)				
Grieves, Robert B., Ph.D. Dept. of Chemical Engineering	Foam Separation Flotation of Colloid Organic Systems	WP-01284-01	1702, 1703 1705, 1706	16,682

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
LOUISIANA				
Louisiana State University Baton Rouge				
West, Phillip W., Ph.D. Dept. of Chemistry	Sampling and Determining Traces of Silver in Waters	WP-00788-02S1 WP-00788-02S2	1602	* *
MAINE				
State of Maine Dept. of Inland Fisheries and Game Augusta				
Everhart, W. Harry, Ph.D. Dept. of Zoology	Effects of Chemical Variations in Aquatic Environments	WP-01145-01	1805	*
Rupp, Robert S., M.S. Dept. of Zoology	Evolution of Allopatric Populations	WP-00888-03	1805	21,088
University of Maine Orono				
Sproul, Otis J., Sc.D. Dept. of Civil Engineering	Effects of Chemical Ions on Virus Inactivation	WP-00387-05	1706	36,646
Zieminski, Stefan A., D.Sc. Dept. of Chemical Engineering	Induced Air Mixing of Large Bodies of Polluted Water	WP-01376-01	1608	24,361
Zieminski, Stefan A., D.Sc. Dept. of Chemical Engineering	Use of Chemical Additives to Improve Aeration Rates	WP-00362-04	1705	*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MARYLAND				
The Johns Hopkins University Baltimore				
Geyer, John C., Ph.D. Dept. of Environmental Science	Fluid Friction in the Presence Non-Rigid Boundaries	WP-01262-01	1604	$ 44,558
Geyer, John C., Ph.D. Dept. of Environmental Science	Ground Water Storage Project	WP-00444-04S1	1606	______*
University of Maryland College Park				
Birkner, Francis B., Ph.D. Dept. of Civil Engineering	Oxygenation Kinetics of Reduced Sulfur Species	WP-01265-01	1605	17,583
Cookson, John T., Jr., Ph.D. Dept. of Civil Engineering	Virus Removal in Packed Beds by Mass Transfer	WP-00981-02	1706	______*
Schwiesow, William F. Shirver Laboratory	Disposal of Wastes from Swine Feeding Floors to Minimize Stream Pollution	WP-01399-01	1304	31,185
MASSACHUSETTS				
Harvard University Boston				
Thomas, Harold A., Jr., Sc.D. School of Public Health	Transport and Fate of Pollutants in Soil	WP-00626-04	1606	24,139

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MASSACHUSETTS				
Harvard University Cambridge				
Dorfman, Robert Ph. D. Harvard Water Program	The Economics of Water Supply and Quality	WP-00919-03	1609	$ 37,183
Mitchell, Ralph, Ph. D. Dept. of Water Resources and Sanitary Engineering	Degradation of Sewage and Soil Microorganisms	WP-00967-03	1606	19,083
Stumm, Werner, Ph. D. Division of Engineering and Applied Physics	Phosphate Exchange with Sediments	WP-01230-01	1601	11,889
Stumm, Werner, Ph. D. Division of Engineering and Applied Physics	Chemical Aspects of Coagulation	WP-00098-06	1701	——*
Stumm, Werner, Ph. D. Division of Engineering and Applied Physics	Inhibition and Repression in Substrate Utilization	WP-00621-03A1	1707	——*
Thomas, Harold A., Jr., Sc. D. Dept. of Environmental Science and Engineering	Operations Research in Water Quality Management	WP-00111-06	1609	110,735
Massachusetts Institute of Technology Cambridge				
Harleman, Donald R. F., Sc. D. Dept. of Civil Engineering	Thermal Stratification and Reservoir Water Quality	WP-01211-01	1613	27,047
Harleman, Donald R. F., Sc. D. Dept. of Civil Engineering	Movement and Mixing of Water Injected into Aquifiers	WP-01039-02	1606	24,649

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MASSACHUSETTS				
Northeastern University Boston				
Goodman, Alvin S., Ph. D. Dept. of Civil Engineering	Data Collection Economics For Water Pollution Studies	WP-01090-02	1609	$ 10,014
Karger, Barry L., Ph. D. Dept. of Chemistry	Studies in Foam Separation and Related Techniques	WP-01129-02	1702, 1703 1705, 1706	$ 14,611
University of Massachusetts Amherst				
Adrian, Donald D., Ph. D. Dept. of Civil Engineering	Source Control of Water Treatment Waste Solids	WP-01239-01S1	1707	13,244
Adrian, Donald D., Ph. D. Dept. of Civil Engineering	Source Control of Water Treatment Waste Solids	WP-01239-02	1707	53,054
Skinde, Rolf T., Ph. D. Dept. of Civil Engineering	Reverse Osmosis Treatment of Wastewaters	WP-01408-01	1701, 1702 1703, 1704 1705	44,727
MICHIGAN				
Michigan State University East Lansing				
Fromm, Paul O., Ph. D. Dept. of Physiology	Toxic Action of Water Soluble Pollutants on Freshwater Fish	WP-00807-08	1805	11,106
Knight, Allen W., Ph. D. W. K. Kellogg Biological Station	The Biology and Physiology of Aquatic Insects	WP-01178-01	1805	_____*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MICHIGAN				
University of Detroit Detroit				
Smith, R. Jay, Ph. D. Dept. of Biology	Indicator-Pathogen Density Relationships in Tributary Streams	WP-01233-01	1603	$ 40,293
University of Michigan Ann Arbor				
Ayers, John C., Ph. D. Great Lakes Research Division	A Coherent Area Study of Southern Lake Michigan	WP-00311-04S1	1601	97,068
Borchardt, Jack A., Ph. D. Dept. of Civil Engineering	Sand Filtration of Discrete Suspensions	WP-00329-06	1701, 1703 1706	8,945
Borchardt, Jack A., Ph. D. Dept. of Civil Engineering	Organic Decomposition at Poised O-R Potential Level	WP-00333-06	1702	14,574
Brater, Ernest F. Dept. of Civil Engineering	Rainfall-Runoff Relations on Urban and Rural Areas	WP-00834-03	1302	——*
Kramer, James R., Ph. D. Great Lakes Research Division	Mineral Water Chemistry, Great Lakes	WP-01303-01	1605	27,591
Mancy, Khalil H. Ph. D. School of Public Health	Dissolved Oxygen Analysis in Natural and Waste Waters	WP-00886-03	1602	18,970
Noble, Vincent E., Ph. D. Great Lakes Research Division	Vertical Current Structure in the Great Lakes	WP-01067-02	1605	24,078
Schultz, Jerome S., Ph. D. Dept. of Chemical and Metallurgical Engineering	Electrical Stimulation of Microbial Waste Treatment	WP-01257-01	1709	——*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MICHIGAN				
University of Michigan Ann Arbor				
Stoermer, Eugene F., Ph. D. Great Lakes Research Division	A Detailed Study of Lake Michigan Plankton Diatoms	WP-01005-02	1805	$ 28,951
Weber, Walter J., Jr., Ph. D. Dept. of Civil Engineering	Research Symposium on Adsorption from Aqueous Solution	WP-01132-01	1700	____*
Weber, Walter J., Jr., Ph. D. Dept. of Civil Engineering	Interactions of Silica with Iron and Aluminum	WP-00674-03	1703	16,260
Weber, Walter J., Jr., Ph. D. Dept. of Civil Engineering	Adsorption from Aqueous Solution	WP-00706-04A1	1702,1705	42,144
MINNESOTA				
Minnesota Engineering Dept. Detroit Lakes				
Larson, Winston C., B. S. Dept. of Engineering	Nutrient Control Project-Detroit Lakes,Minnesota	WP-01469-01	1601	68,100
University of Minnesota Minneapolis				
Johnson, Walter K., Ph. D. Dept. of Civil Engineering	Nitrification and Denitrification of Wastewater	WP-01028-02	1701,1705	32,216
Maier, Walter J., Ph. D. Dept. of Civil Engineering	Removal of Colloidal Matter from Wastewater	WP-01219-01	1703	28,221
Olson, Theodore A., Ph. D. School of Public Health	Benthonic Invertebrates as an Index of Water Quality	WP-00320-06	1805	30,236

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MINNESOTA				
University of Minnesota Minneapolis				
Olson, Theodore A., Ph.D. School of Public Health	Lake Superior Periphyton Relation to Water Quality	WP-00828-03	1608	$ ______*
Shapiro, Joseph, Ph.D. Dept. of Geology and Geophysics	Inorganic-Organic Interactions in Natural Waters	WP-00771-04	1605	33,024
Silberman, Edward, M.S. St. Anthony Falls Hydraulic Laboratory	The Role of Mixing in Maintaining Stratified Flow	WP-00913-03	1605	35,910
Smith, Lloyd L., Jr., Ph.D. Dept. of Entomology, Wildlife and Fisheries	Effect of Paper Fiber Wastes on Fish Eggs and Juveniles	WP-00223-07	1805	183
Winona State College Winona				
Fremling, Calvin R., Ph.D. Department of Biology	Mayfly Distribution as a Water Quality Index	WP-00987-03	1805	9,898
MISSISSIPPI				
Gulf Coast Research Laboratory Ocean Springs				
Abbott, Walter, Ph.D. Senior Marine Biologist	Nutrient Assimilation Rates Field Studies	WP-01030-01	1601	5,897
Abbott, Walter, Ph.D. Senior Marine Biologist	Nutrient Assimilation Rates Field Studies	WP-01030-02	1601	24,644

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MISSOURI				
University of Missouri Columbia				
Campbell, Robert S., Ph. D. Dept. of Zoology	Recovery from Acid Pollution in Four Strip-Mine Lakes	WP-00379-06	1401	$ 23,057
Enns, Wilbur R., Ph. D. Dept. of Entomology	Insects Associated with Midwestern Oxidation Lagoons	WP-00718-03	1805	____*
Smith, George E., Ph. D. Dept. of Soils	Nitrates in Water Supplies	WP-00533-05	1801	29,084
Venable, Raymond L., Ph. D. Dept. of Chemistry	Removal of Metal Ions by Flotation with Surfactants	WP-01235-01	1704	32,946
MONTANA				
Montana State University Bozeman				
Berg, Lloyd, Ph. D. Dept. of Chemical Engineering	Terpenes From Sulfate Pulp Mill Waste Liquor	WP-00510-05	1204	____*
Wright, John C., Ph. D. Dept. of Botany and Microbiology	The Hydrobiology of the Madison Rivers and its Headwaters	WP-00125-06	1605	26,880
Wright, John C., Ph. D. Dept. of Botany and Microbiology	The Limnology of Yellowtail Reservior and the Big Horn River	WP-01172-01	1805	____*
University of Montana Missoula				
Nakamura, Mitsuru, Ph. D. Dept. of Microbiology	Detection and Significance Enzootic Water Pollution	WP-00824-03	1603	16,560

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEVADA				
University of Nevada Reno				
Sharp, John V. A., Ph. D. Center for Water Resources Research Desert Research Institute	Water Quality Regimen of the Tahoe-Truckee System	WP-01458-01	1608	$ 37,450
NEW HAMPSHIRE				
University of New Hampshire Durham, New Hampshire				
Slanetz, Lawrence W., Ph. D. Dept. of Microbiology	Enteric Bacteria and Viruses in Sewage, Water and Shellfish	WP-00009-12	1603	39,397
NEW JERSEY				
Newark College of Engineering Newark				
Metzger, Ivan, Eng. Sc. D. Dept. of Civil Engineering	Effects of Fluid Properties on Stream Aeration	WP-01099-01	1608	______*
Rutgers, The State University New Brunswick				
Finstein, Melvin S., Ph. D. Dept. of Environmental Sciences	Continuous Flow and Batch Cultures of Sphaerotilus	WP-00212-07	1707	______*
Moul, Edwin T., Ph. D. Dept. of Botany	Diatom Communities of the Raritan River System	WP-00949-02 WP-00949-02S1	1805	______* ______*
Torpey, Wilbur N., M. CE. Dept. of Environmental Sciences	Removal of BOD and Nutrients by Biological Slimes	WP-01322-01	1701,1705	101,806

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW JERSEY				
Rutgers, The State University New Brunswick				
Trama, Francesco B. Dept. of Zoology	Impoundment Studies on the Raritan River, New Jersey	WP-00059-06	1504	$ ______*
NEW MEXICO				
Eastern New Mexico University Portales				
Sublette, James E., Ph. D. Dept. of Biological Sciences	Cytotaxonomy and Related Studies of Holartic Midges	WP-00468-05	1805	17,956
New Mexico State University Las Cruces				
Speece, Richard E., Ph. D. Dept. of Civil Engineering	Controlling Factors in Methane Fermentation	WP-01001-03	1707	28,109
New Mexico State University University Park				
Clark, John W. Dept. of Civil Engineering	Continuous Monitoring of Some Organic Wastes	WP-00631-03	1602	______*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW YORK				
American Water Works Association New York				
Faber, Harry A. Research Director	Disposal of Wastes from Water Treatment Plants	WP-01535-01	1707	$ 46,305
Boyce Thompson Institute for Plant Research, Inc. Yonkers				
Torgeson, Dewayne C., Ph. D. Program Director	Interaction of Herbicides and Soil Microorganisms	WP-00750-04	1606	45,698
City College Research Foundation New York				
Haines, Thomas H., Ph. D. Dept. of Chemistry	Structure and Function of a New Sulfolipid	WP-00675-04	1805	_____*
Clarkson College of Technology Potsdam				
Jellinek, Hans H. G., Ph. D. Dept. of Chemistry	Photodegradation of Polymers in Aqueous Solution	WP-00791-03	1702	_____*
Matijevic, Egon, Ph. D. Dept. of Chemistry	Flocculation of Colloids Suspended in Water	WP-00815-03	1703	_____*
Matijevic, Egon, Ph. D. Dept. of Chemistry	Second Workshop Seminar on Coagulation and Flocculation	WP-01131-01	1703	_____*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW YORK				
Columbia University New York				
Linford, Henry B., Ph. D. Dept. of Chemical Engineering	Cationic Polymers as Flocculant Aids in Water	WP-00240-06	1703	$ ______*
Littauer, Sebastin B. Dept. of Industrial and Management Engineering	Statistical Theory of Extreme Values and Their Application in Hydrology	WP-00457-05	1609	______*
Cornell University Ithaca				
Barlow, John P., Ph. D. Div. of Biological Sciences	Eutrophication of Tidal Waters	WP-00176-08S1 WP-00176-09	1601	______* ______*
Dondero, Norman C., Ph. D. Dept. of Food Science	Adaptation by Microbial Populations	WP-01034-02	1705	22,067
Graf, Walter H., Ph. D. School of Civil Engineering	The Transport of Solid Suspension in Conduits	WP-00838-02	1707	______*
Liggett, James A., Ph. D. School of Civil Engineering	Mathematical Models of Hydrologic Systems	WP-00948-02	1609	______*
Manhattan College Bronx				
Jeris, John S., Sc. D. Dept. of Civil Engineering	The Biochemistry of Anaerobic Digestion	WP-00577-05	1707	27,417

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW YORK				
Columbia University New York				
Linford, Henry B., Ph. D. Dept. of Chemical Engineering	Cationic Polymers as Flocculant Aids in Water	WP-00240-06	1703	$ ________*
Littauer, Sebastin B. Dept. of Industrial and Management Engineering	Statistical Theory of Extreme Values and Their Application in Hydrology	WP-00457-05	1609	________*
Cornell University Ithaca				
Barlow, John P., Ph. D. Div. of Biological Sciences	Eutrophication of Tidal Waters	WP-00176-08S1 WP-00176-09	1601	________* ________*
Dondero, Norman C., Ph. D. Dept. of Food Science	Adaptation by Microbial Populations	WP-01034-02	1705	22,067
Graf, Walter H., Ph. D. School of Civil Engineering	The Transport of Sol Suspension in Condui	WP-00838-02	1707	________*
Liggett, James A., Ph. D. School of Civil Engineering	Mathematical Models of Hydrologic Systems	WP-00948-02	1609	________*
Manhattan College Bronx				
Jeris, John S., Sc. D. Dept. of Civil Engineering	The Biochemistry of Anaerobic Digestion	WP-00577-05	1707	27,417

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW YORK				
New York University Bronx				
Mehr, Emanuel, M. A. Dept. of Meteorology and Oceanography	Computer Simulation of Dye Dump Studies	WP-00662-03	1609	$ ______*
Mehr, Emanuel, M. A. Geophysical Science Laboratory	Computer Simulation of Diffusion Studies	WP-01255-01	1607	17,162
Schwartzberg, Henry G. Dept. of Chemical Engineering	The Spreading of Oil Films	WP-01342-01A1	1607	25,716
Polytechnic Institute of Brooklyn Brooklyn				
Bruins, Paul F., Ph. D. Dept. of Chemistry	Advance Waste Treatment by Ultrafiltration	WP-00620-03	1703	______*
Rensselaer Polytechnic Institute Troy				
Clesceri, Lenore S., Ph. D. Dept. of Civil Engineering	Oxygen Utilization in Concentrated Microbial Systems	WP-00876-03	1703, 1705 1706	28,440
Research Foundation of State University of New York Albany				
Dence, Carlton W., Ph. D. State University College of Forestry	Composition of Residues from Pulp Bleaching Treatments	WP-01038-02	1204	15,517
LaLonde, Robert T., Ph. D. College of Forestry	Aquatic Plant Chemistry, Its Application to Pollution Control	WP-01258-01	1602	30,974

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW YORK				
Research Foundation of State University of New York Albany				
Partheniades, Emanuel, Ph.D. Dept. of Civil Engineering	Deposition of Fine Sediments in Turbulent Flows	WP-01253-01	1605	$ 26,194
Rumer, Ralph R., Jr., Sc. D. Dept. of Civil Engineering	Dynamic Model Study of Lake Erie	WP-00837-03	1605	22,409
Storr, John F., Ph. D. Dept. of Biology	Ecology of Polluted and Nonpolluted Lake Communities	WP-01065-02	1603	______*
Syracuse University Syracuse				
Jackson, Daniel F., Ph. D. Dept. of Civil Engineering	Investigation of Bloom-Producing Algae	WP-00782-03	1601	______*
Kramer, James R., Ph. D. Dept. of Geology	Mineral-Water Chemistry, Great Lakes	WP-00868-02	1608	______*
Li, Wen-Hsiung, Ph. D. Dept. of Civil Engineering	Transverse Dispersion of Contaminant in Groundwater	WP-00575-04	1606	______*
Lundgren, Donald G. Dept. of Bacteriology and Botany	Physiology and Culture of Iron Oxidizing Bacteria	WP-00548-05 WP-00548-05S1-A1	1401	______*
Nemerow, Nelson L., Ph. D. Dept. of Civil Engineering	Allocation of Stream Pollution Carrying Capacity	WP-01089-01	1608	______*
Rice, P. A., Ph. D. Dept. of Chemical Engineering and Metallurgy	Biological Treatment of Acid Mine Water	WP-01460-01	1401	47,238

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW YORK				
Syracuse University Syracuse				
Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy	A Study of the Aeration Process in Non-Newtonian Fluid	WP-00719-03	1705	$ ________*
Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy	Atomization and Drop Size of Non-Newtonian Fluid	WP-00867-03	1707	18,480
Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy	Mass Transfer Analysis in Reverse Osmosis Operation	WP-00968-02	1701, 1702 1703, 1704 1705, 1706	19,738
Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy	Carbon Column Operation in Wastewater Treatment	WP-01007-01A2	1702, 1705	58,530
Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy	The Effect of Gas Bubble Motion on Fluid Mixing in Aeration Process	WP-00922-03	1705	18,100
Turian, Raffi M., Ph. D. Dept. of Chemical Engineering and Metallurgy	Pipeline Flow of Solids-Liquid Suspensions	WP-01122-02	1707	18,050

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NORTH CAROLINA				
North Carolina State University Raliegh				
Horton, Donald B., Ph.D. Director, Pamilco Marine Lab	"Phosphate Mining Effluent in Estuarine Ecology	WP-00958-03	1805	63,045
University of North Carolina Chapel Hill				
Mah, Robert A., Ph.D. Dept. of Environmental Sciences and Engineering	Microbiology of Anaerobic Sludge	WP-00921-03	1707	20,216
OHIO				
Case Institute of Technology Cleveland				
Sparks, Robert E., Ph.D. Division of Engineering	Emulsion Braking by Coalescence on Adsorbed Films	WP-00854-03	1702	______*
Central State University Wilberforce				
O'Hara, James J., Ph.D. Dept. of Biology	Sublethal Influence of Pollutants on Fish Metabolism	WP-01281-01	1805	11,016
Kent State University Kent				
Gould, Edwin S., Ph.D. Dept. of Chemistry	Metal-Catalyzed Oxidations of Organic Contaminants	WP-01209-01	1702 1705	33,922

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
OHIO				
Kenyon College Gambier				
Pappenhagen, James M., Ph.D. Dept. of Chemistry	Determination of Ions in Wastes and Waters	WP-00137-13	1602	10,279
Ohio State University Research Columbus				
Dugan, Patrick R., Ph.D, Dept. of Microbiology	Concentration of Chemicals by Floc Forming Organisms	WP-00713-03	1704 1705	$ 24,657
Hanna, George P. Dept. of Civil Engineering	Acid Mine Drainage-An Analysis of the State of the Art	WP-01328-01	1401	28,811
Smith, Edwin E., Ph.D. Dept. of Chemical Engineering	Study of Sulfide-to-Sulfate Reaction Mechanism	WP-00340-07	1401	24,934
University of Cincinnati Cincinnati				
Lemlich, Robert, Ph.D. Dept. of Chemical Engineering	Foam Fractionation with Reflux	WP-00161-09	1702,1703, 1705,1706	18,205
Scarpino, Pasquale V., Ph.D. Dept. of Civil Engineering	Factors Influencing the Survival of Bacteria in Sea Water	WP-00844-03	1607	——— *
Spoor, William A., Ph.D. Dept. of Biological Sciences	Fish Opercular Response to Environmental Variables	WP-01317-01	1805	12,768

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
OHIO				
University of Toledo Research Fdn. Toledo				
Bennett, Gary F., Ph.D. Dept. of Chemical Engineering	Oxygen Transfer Rates Through Biological Slimes	WP-00822-02	1805	______*
OKLAHOMA				
Oklahoma State University Stillwater				
Gaudy, Anthony F., Jr., Ph.D. School of Civil Engineering	Kinetics and Mechanism in Activated Sludge Processes	WP-00325-06	1703,1705, 1706	$ 29,409
Gaudy, Anthony F., Jr., Ph.D. School of Civil Engineering	Metabolic Control Mechanisms in Biological Treatment	WP-00786-03	1709	______*
Gaudy, Anthony F., Jr., Ph.D. School of Civil Engineering	Response of Activated Sludge to Organic Shock Loads	WP-00075-06	1707	______*
University of Oklahoma Norman				
Reid, George W., M.S. School of Civil Engineering	Evaluation of Dispersed Pollutional Load	WP-01193-01	1604	______*
OREGON				
Oregon State University Corvallis				
Burgess, Fredrick J. Dept. of Civil Engineering	Airphoto Analysis of Ocean Outfall Dispersion	WP-01383-01	1607	52,432

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
OREGON				
Oregon State University Corvallis				
Burgess, Fredrick J. Dept. of Civil Engineering	Pulp Mill Effluent Disposal	WP-00524-05	1204	24,485
Freed, Virgil H., Ph.D. Dept. of Agricultural Chemistry	Chemical Bruch Control: Biochemistry and Toxic Hazard	WP-00477-05	1604	______*
Goulding, Robert L., Ph.D. Dept. of Entomology	Macro-Fauna in Waste Stabilization Lagoons	WP-00923-03	1703,1705	13,158
Krygier, James T., M.S. School of Forestry	Studies on Effects of Watershed Practices on Streams	WP-00423-06	1301	81,273
Neal, Victor T., Ph.D.	Physical Factors Affecting Oregon Coastal Pollution	WP-01380-01	1607	39,138
Pacha, Robert E., Ph.D. Dept. of Microbiology	Sediment-Water-Bacteria Interaction in Eutrophication	WP-01389-01	1601	28,387
Pacha, Robert E., Ph.D. Dept. of Microbiology	Studies on Aquatic Myxobacteria	WP-00925-03	1805	11,318
Phinney, Harry K., Ph.D. Dept. of Botany and Plant Pathology	The Autecology of Some Blue-Green Plankton Algae	WP-00666-04	1601	18,623
Schaumburg, Frank D. Dept. of Civil Engineering	Influence of Log Rafting on Water Quality	WP-01320-01	1210	24,174
Schroeder, Herbert A., D.Sc. Forest Research Laboratory	Lignin Sulfonates in Pulp Mill Effluents	WP-00823-03	1204	______*
Seaders, John, M.S. Dept. of Civil Engineering	Factors Influencing Temperature and Stream Quality	WP-00684-04	1608	______*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
OREGON				
Oregon State University Corvallis				
Slotta, Larry S., Ph.D. Dept. of Civil Engineering	Stratified Reservior Currents	WP-00983-02 WP-00983-02S1 WP-00983-02S2	1605	——————*
Stoevener, H. H., Ph.D. Dept. of Agricultural Economics	Economic Benefits from an Improvement in Water Quality	WP-01477-01	1609	30,639
Warren, Charles E., Ph.D. Dept. of Fisheries and Wildlife	Dissolved Oxygen Requirements of Freshwater Fish	WP-00135-13	1805	22,883
Warren, Charles E., Ph.D. Dept. of Fisheries and Wildlife	Ecological Studies of an Experimental Stream	WP-00157-10	1805	31,930
PENNSYLVANIA				
Academy of Natural Sciences Philadelphia				
Patrick, Ruth, Ph.D. Dept. of Limnology	Factors Affecting the Structure of Diatom Communities	WP-00475-05	1805	86,535
Carnegie Institute of Technology Pittsburgh				
Bugliarello, George, Sc.D. Dept. of Civil Engineering	A Synthetic Computer Language for Sanitary Engineering	WP-00415-05 WP-00415-05S1	1609	————* ————*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
PENNSYLVANIA				
Drexel Institute of Technology Philadelphia				
Remson, Irwin, Ph.D. Dept. of Civil Engineering and Mechanics	Radial Flow of Soil Moisture	WP-00820-02	1606	———*
Lehigh University Bethlehem				
Couglin, Robert W., Ph.D. Dept. of Chemical Engineering	Effect of Surface Groups on Adsorption of Pollutants	WP-00969-03	1702 1705	21,715
Graf, Walter H., Ph.D. Fritz Engineering Laboratory	The Transport of Solid Suspension in Conduits	WP-01478-01	1707	15,535
Parker, Basil W., Ph.D. Dept. of Biology	Thermal and Industrial Pollution: Delaware River	WP-00885-03	1613	24,830
Pennsylvania Military College Chester				
Wise, Donald L., Ph.D. Dept. of Engineering	Diffusion Coefficients of Gases in Liquids	WP-00671-02S1	1704	———*
Pennsylvania State University University Park				
Anthony, Adam, Ph.D. Life Science Building	Cytopathology in Fish Exposed to Stream Pollutants	WP-01364-01	1805	$ 29,060

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
PENNSYLVANIA				
Regional Science Research Institute Philadelphia				
Coughlin, Robert E., Ph.D. Regional Science Research Inst.	Economic Evaluation of Stream Quality Preservation through Urban Land Use Management	WP-01394-01A1	1608	34,699
Isard, Walter President	Economics of Water Quality for a Regional System	WP-00938-03	1608	64,749
University of Pennsylvania Philadelphia				
Strong, Ann Louise, LLB. Dept. of City and Regional Planning	Stream Quality Preservation Through Urban Land Use Management: Legal and Governmental Aspects	WP-01393-01A1	1608	44,831
University of Pittsburgh Pittsburgh				
Cummins, Kenneth W., Ph.D. Dept. of Biology	The Microdistribution of Stream Benthos	WP-00525-05	1805	21,451
RHODE ISLAND				
University of Rhode Island Kingston				
Conover, John T., Ph.D. Graduate School of Oceanography	The Effects of Pollution on Benthic Marine Plant Communities	WP-00755-03	1805	——— *
Jeffries, Harry P., Ph.D. Graduate School of Oceanography	Chemical Responses by Marine Organisms to Stress	WP-00858-02 WP-00858-03	1805 1805	774 30,945

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
RHODE ISLAND				
University of Rhode Island Kingston				
Marshall, Nelson, Ph.D. Graduate School of Oceanography	Sensitivity of Benthic Microflora to Pollution Gradients	WP-01220-01	1805	748
Marshall, Nelson, Ph.D. Graduate School of Oceanography	Sensitivity of Benthic Microflora to Pollution Gradients	WP-01220-02	1805	20,487
SOUTH CAROLINA				
Clemson University Clemson				
Andrews, John F., Ph.D. Environmental Systems Engineering	Kinetics of Biological Filters	WP-01181-02	1703 1705 1706	19,909
Barlage, William B., Jr., Ph.D. Dept. of Chemical Engineering	The Effect of Surface-Active Agents on Gas Absorption	WP-00911-02	1702	______*
University of South Carolina Columbia				
Davis, Milton W., Jr., Ph.D. Dept. of Chemical Engineering	Purification of Industrial Wastes by Ion Exchange	WP-00595-03	1704	______*
Nelson, Bruce W., Ph.D. Dept. of Geology	Chemical Exchanges Across Sediment-Water Interfaces	WP-00651-04	1704	______*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
TENNESSEE				
University of Tennessee Knoxville				
Bunting, Dewey L. Dept. of Zoology & Entomology	Effects of Water Pollution on Zooplankton	WP-00927-03	1805	9,980
Vanderbilt University Nashville				
Fisher, Gerald T., Ph.D. Dept. of Chemical Engineering	Refractory Adsorption on Chemcoke	WP-01243-01	1702 1705	42,492
Krenkel, Peter A., Ph.D. Dept. Sanitary & Water Resources Engineering	National Symposium on Thermal Pollution	WP-01435-01	1613	21,670
Krenkel, Peter A., Ph.D. Dept. Sanitary & Water Resources Engineering	Project for Concentrated Research and Training in the Hydrologic and Hydraulic Aspects Of Water Pollution Control	WP-01463-01A1	1605 1608 1613	93,525
Malaney, George W., Ph.D. Dept. of Civil Engineering	Activated Sludge as an Ecological System	WP-00816-02 WP-00816-02S1	1707	———* ———*
Parker, Frank L., Ph.D. Sanitary and Water Resources Engineering	Status of Thermal Pollution and Research Needs	WP-01387-01	1613	30,552
Schnelle, Karl B., Jr., Ph.D. School of Engineering	Dewatering and Drying of Sewage Sludge on Porous Media	WP-01053-02	1707	22,690

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
TEXAS				
Baylor University Waco				
Davidson, Floyd F., Ph.D. Dept. of Biology	Toxic Properties of the Blue-Green Algae	WP-00002-12	1805	______*
North Texas State University Denton				
Silvey, Joseph K.G., Ph.D. Dept. of Biology	A Study of Metabolism of the Aquatic Actinomycetes	WP-00805-04	1805	16,683
Silvey, Joseph K.G., Ph.D. Dept. of Biology	Naturally Occuring Tastes and Odors in Water Supplies	WP-00785-04	1801	32,639
Stewart, Kenneth W. Dept. of Biology	Dispersal of Viable Algae and Protozoa	WP-00855-03	1604	9,307
Texas A&M Research Foundation College Station				
Davis, William B., S.M. Dept. of Civil Engineering	The Molecular Nature of Organic Waste Removal Patterns	WP-01312-01	1702 1705	32,792
Martell, Arthur E., Ph.D. Dept. of Chemistry	Metal Ion-Catalyzed Oxidation of Phenols and Aromatic Amines	WP-01197-02	1702	39,301
Smerdon, Ernest T., Ph.D. Water Resources Institute	Water Pollution From Eroded Sediments	WP-00757-03	1604	______*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
TEXAS				
Texas Research Foundation Renner				
Correll, Donovan S., Ph.D. Botanical Laboratory	Aquatic Plants of Polluted Waters in Southwest United States	WP-00685-04A1	1603	34,404
Texas Technological College Lubbock				
Grubb, Herbert W., Ph.D. Dept. of Agricultural Economics	Economics of Multipurpose Playa Lake Modification	WP-00775-02	1609	______*
The University of Texas Austin				
Beightler, Charles S., Ph.D. Dept. of Mechanical Engineering	Use of New Analytical Methods for Water Resources Development	WP-01186-01	1609	______*
Bold, Harold C., Ph.D. Dept. of Botany	An Investigation of Texas Soil Algae	WP-01057-07	1805	______*
Copeland, B. J., Ph.D. Marine Science Institute	Effects of Rivers on the Metabolism of Texas Bays	WP-00811-03	1607	25,030
Fruh, E. Gus, Ph.D. Dept. of Engineering	Enzymatic Technique for Detection of Surplus Phosphorus Uptake by Activated Sludge	WP-01449-01	1701	18,869
Gloyna, Earnest F., Dr. Engr. Dept. of Civil Engineering	Effect of Toxic Organics on Waste Stabilization	WP-00688-03	1709	______*
Gloyna, Earnest F., Dr. Engr. Dept. of Civil Engineering	Bactericidal Effects of Algae on Enteric Organisms	WP-01200-01	1804	20,777
Masch, Frank D., Ph.D. Dept. of Civil Engineering	Mixing and Dispersion of Contaminants in Reserviors	WP-00705-03	1605	25,942

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
TEXAS				
University of Texas Medical Branch Galveston				
Smith, Leland L., Ph.D. Dept. of Biochemistry	Sterols and Lipids in Water Pollution	WP-01003-02	1605	16,452
UTAH				
Utah Department of Fish & Game Salt Lake City				
Hinshaw, Russell N., M.S. Dept. of Fish & Game	Pollution as a Result of Fish Cultural Activities	WP-01285-02	1604	11,445
University of Utah Salt Lake City				
Gaufin, Arden R., Ph.D. Dept. of Zoology and Entomology	Bio-Assays of the Toxicity of Pesticides to Aquatic Invertebrates	WP-00003-12	1805	________*
Gaufin, Arden R., Ph.D. Dept. of Zoology and Entomology	Production of Taste and Odor Producing Algae in Reserviors	WP-00334-06	1801	________*
Utah State University Logan				
Hendericks, David W., Ph.D. Water Research Laboratory	Bacterial Adsorption on Soils	WP-01111-01A1	1604	32,021
Neuhold, John M., Ph.D. Dept. of Wildlife Resources	Halide Water Quality Toxicity Effects on Fish	WP-00768-03	1805	________*

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
UTAH				
Utah State University Logan				
Peterson, Howard B., Ph.D. Dept. of Agriculture and Irrigation Engineering	Quality of Irrigation Return Flow	WP-01492-01(N)1	1303	151,904
VIRGINIA				
Virginia Polytechnic Institute Blacksburg				
Krutchkoff, Richard G., Ph.D. Dept. of Statistics	A Stochastic Model for Pollution in Estuaries	WP-01216-01	1607	39,698
Walker, William R., L L.B. Water Resources Research Center	Water Rights Related to Water Quality Storage	WP-01087-02	1609	19,456
WASHINGTON				
University of Washington Seattle				
Allan, G. Graham, Ph.D. College of Forestry	Pollution Abatement by Fiber Modification	WP-01166-02	1204	47,041
Anderson, George C., Ph.D. Dept. of Oceanography	Annual Phytoplankton Production in Puget Sound Waters	WP-00633-05	1601	46,782

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS.NO.	AMOUNT
WASHINGTON				
University of Washington Seattle				
Bevan, Donald E., Ph.D. College of Fisheries	Estuarine Ecology	WP-00642-03	1805	________*
Carlson, Dale A., Ph.D. Dept. of Civil Engineering	Wastewater Odor Reduction Mechanisms in Soil Filters	WP-00883-03	1702	30,968
Carlson, Dale A., Ph.D. Dept. of Civil Engineering	Status and Research Needs for Potato Wastewaters	WP-01486-01	1206	18,343
Christman, Russell F., Ph.D. Dept. of Civil Engineering	Chemical Characteristics of Organic Color in Water	WP-01031-02	1602	27,281
English, Thomas S., Ph.D. Dept. of Oceanography	Distribution of Demersal Fishes in Inshore Waters	WP-00803-03S1	1805	4,656
Gessel, Stanley P., Ph.D. College of Forestry	Influence of Forest Ecosystems on Water Quality	WP-00743-03	1608	________*
Katz, Max, Ph.D. College of Fisheries	Sublethal Amounts of Organic Insecticides and Fish	WP-00956-02	1805	________*
McCarthy, Joseph L., Ph.D. Dept. of Chemical Engineering	Studies of Low Molecular Weight Lignin Sulfonates	WP-00628-04	1604	20,482
McCarthy, Joseph L., Ph.D. Dept. of Civil Engineering	Steam Stripping of Kraft Pulp Mill Effluent Streams	WP-01305-01	1204	43,665
Nece, Ronald E., Sc.D. Dept. of Civil Engineering	Salt Water Entrainment for Dilution in Sewer Outfalls	WP-00512-05	1608	12,118
Oglesby, Ray T., Ph.D. Dept. of Civil Engineering	System Analysis of Eutrophication Control by Flushing	WP-01391-01	1601	109,642

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
WASHINGTON				
University of Washington Seattle				
Scott, David R., Ph.D. College of Forestry	Water Relationships in High Altitude Forests	WP-00720-03	1608	________*
Smith, Lynwood S., Ph.D. Fisheries Research Institute	Responses of Fish to Environmental Stress	WP-01056-03	1805	52,739
Taub, Frieda B., Ph.D. College of Fisheries	Biological Models of Freshwater Communities	WP-00982-03	1805	31,449
Washington State University Pullman				
Bennett, Paul J., B.S. Dept. of Sanitary Engineering	Water Reclamation by Reverse Osmosis	WP-00624-04	1708	________*
Dunstan, Gilbert H. Sanitary Engineering	Occurence of Pesticides in Aquatic Environments	WP-00676-04	1605	2,707
Kittrick, James A., Ph.D. Dept. of Agronomy	Clay Mineral Stability and Water Composition	WP-01016-02	1611	13,800
Parker, Richard A., Ph.D. Dept. of Zoology	Some Aspects of Microcrustacean Phosphate Metabolism	WP-00903-06	1805	________*
Stokes, Jacob L., Ph.D. Dept. of Bacteriology and Public Health	The Biology and Chemistry of Sphaerotilus	WP-00239-07	1805	25,426
Tinney, E. Roy, Ph.D. Albrook Hydraulic Laboratory	Flushing of Small Shallow Lakes	WP-01313-01	1601	16,089

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
WASHINGTON				
Western Washington State College Bellingham				
Dube, Maurice A., Ph.D. Dept. of Biology	Effects of Pollutants on Submarine Plant Synecology	WP-01206-01	1805	19,951
WEST VIRGINIA				
West Virginia University Morgantown				
Gerencser, Vincent F., Ph.D. Dept. of Microbiology	Studies on Aquatic Stalked Bacteria	WP-00616-03S2	1805	3,068
WISCONSIN				
Marquette University Milwaukee				
Zanoni, Alphonse E., Ph.D. Dept. of Civil Engineering	Effluent Deoxygenation at Different Temperatures	WP-00829-02	1707	———*
University of Wisconsin Madison				
Chesters, Gordon, Ph.D. Dept. of Soils	Herbicide Removal Processes in Soil	WP-00751-03	1606	———*
Ensign, Jerald C., Ph.D. Dept. of Bacteriology	Significance of Arthrobacter in Ecology of Water and Soil	WP-01316-01	1305	23,190

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
WISCONSIN				
University of Wisconsin Madison				
Fitzgerald, George P., Ph.D. Water Chemistry Laboratory	Detection of Limiting and Surplus Nutrients in Algae	WP-00297-07	1601	28,680
Lee, G. Fred Ph.D. Dept. of Civil Engineering	Concentration of Organic Solutes in Water	WP-00371-03	1702	______*
Rohlich, Gerard A., Ph.D. Hydraulic and Sanitary Laboratory	Eutrophication of Natural Waters	WP-01470-01	1601	187,917
Rohlich, Gerard A., Ph.D. Hydraulic and Sanitary Laboratory	Investigation of Zoogleal Flocs	WP-00905-03	1705	15,141
FOREIGN				
AUSTRALIA				
Melbourne Water Science Institute Melbourne				
Parker, Cecil D. Director	Function of Solids in Lagoon Treatment of Sewage	WP-00321-05	1709	______*
University of Sydney Sydney				
Alexander, Albert E., Sc.D. Department of Pharmacy	Effect of Surface Films on Gases Dissolved in Water	WP-00877-03	1605	12,850

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT-NO.	PPBS. NO.	AMOUNT
FOREIGN				
CANADA				
University of Toronto Ontario				
Brinkhurst, Ralph O., Ph.D. Department of Zoology	Taxonomy and Biology of Tubificidae (Sludge Worms)	WP-00940-03	1805	20,885
University of Waterloo Waterloo, Ontario				
Csanady, Gabriel T., Ph.D. Dept. of Mechanical Engineering	Big Eddies and Mixing Processes in the Great Lakes	WP-01139-01	1608	________*

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WATER POLLUTION CONTROL

RESEARCH CONTRACTS FISCAL YEAR 1968

SUMMARY OF CONTRACT AWARDS BY STATES

State	Number of Contractors	Number Awarded	Amount Awarded
Alabama	1	1	$ 51,900
Arizona	1	1	65,950
California	16	24	2,010,716
Connecticut	1	1	42,932
Delaware	1	1	99,862
District of Columbia	1	2	80,606
Florida	1	1	71,810
Illinois	3	5	262,416
Indiana	1	1	58,402
Massachusetts	4	5	255,469
Michigan	1	1	143,882
Missouri	1	3	157,646
Montana	1	1	72,750
New Jersey	3	3	146,881
New York	1	1	42,336
Ohio	3	3	382,173
Oregon	2	2	19,225
Pennsylvania	3	3	17,584
Rhode Island	1	1	128,085
Utah	1	1	34,521
Washington	1	1	38,000
Wisconsin	2	2	76,066
22 States	50	64	$ 4,259,212

Active Research Contracts 1968

9 States
15 Contractors
17 Contracts

WATER POLLUTION CONTROL

RESEARCH CONTRACTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 5 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
ALABAMA				
Southern Research Institute Birmingham	Demineralization of Sewage Effluents by the Transport-Depletion Process	14-12-443	1701 1704	$ 51,900
ARIZONA				
INFILCO Fuller Company Tucson	Advanced Wastewater Treatment Using Powdered Activated Carbon in Recirculating Slurry Contractor Clarifiers	14-12-400	1702 1703 1705	65,950
CALIFORNIA				
Aerojet-General Corp. El Monte	A Study of Biological Methods of Sludge Dewatering	14-12-427	1707	78,400
Aerojet-General Corp. El Monte	Analytical Instrumentation for Determining Low Levels of Total Organic Carbon in Water	14-12-182	1602	48,900
Aerojet-General Corp. El Monte	Renovation of Municipal Wastewater by Reverse Osmosis Systems	14-12-184	1701 1702 1704 1705	203,299

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
Aerojet-General Corp. El Monte	An Experimental Reverse Osmosis Unit for Wastewater Recovery	14-12-106	1701 1702 1704 1705	$ 53,740* 23,643
American Process Equipment Los Angeles	A Study of the Effect of Ultrasonic Energy on Wastewater	14-12-196	1701 1702 1706	29,120
Atomics International Canoga Park	Study of the Kinetics and Nature of Precipitate Obtained in Phosphate Removal Using Iron and Aluminum	14-12-158	1701	93,500
Atomics International Canoga Park	A Study of a Process for Phosphate Removal from Water Supplies Using Lanthanum Precipitation	14-12-183	1701 1702 1704	29,167
Bechtel Corp. San Francisco	Technical Feasibility and Analysis of Costs and Effectiveness of Bulk Transport of Sewage Treatment Plant Sludge and Dredging Spoils	14-12-156	1401 1507	279,597
County Sanitation District No. 2 of Los Angeles County Los Angeles	Phosphorus Removal by Addition of Aluminum to the Activated Sludge Process	14-12-152	1701 1702 1704	7,500
Electro-Optical System, Inc. Pasadena	Plasma Arc Processing of Sulfite Waste Liquors	14-12-162	1204	49,945
Engineering Science, Inc. Arcadia	Studies on Removal of Carbonaceous, Nitrogenous, and Phosphorus Materials from Concentrated Process Waste Streams	14-12-431	1701	44,904

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LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
FMC Corp. Santa Clara	Process to Remove Carbonaceous, Nitrogeneous, and Phosphorus Materials from Concentrated Process Waste Streams	14-12-414	1701	$119,346
Garrett Research and Development Co., Inc. Laverne	An Investigation of High-Pressure Foam Wastewater Treatment Process	14-12-176	1702 1703 1705 1706	31,874
General Electric Company Pleasanton	Development of a New Technique for Water Tracing	14-12-436	1606	106,339
Gulf General Atomic, Inc. San Diego	Study and Experiments in Wastewater Reclamation by a Reverse Osmosis Process	14-12-181	1703 1704 1705	112,410
Gulf General Atomic, Inc. San Diego	Membrane Materials for Wastewater Reclamation by Reverse Osmosis	14-12-452	1701 1702 1703 1704 1705 1706	65,138
Los Angeles City Board of Public Works Los Angeles	Characterization of the Activated Sludge Process at the Hyperion Treatment Plant	14-12-148	1705	77,174
Los Angeles County Sanitation District No. 2 Los Angeles	Support of the Advanced Waste Treatment Pilot Plant at Pomona, California	14-12-150	1708	155,545
Rocketdyne, Division of North American Rockwell Corp. Canoga Park	Dilute Solution Reactions of Nitrate Ion as Applied to Water Reclamation	14-12-52	1708	26,749
Rocketdyne, Division of North American Rockwell Corp. Canoga	Electro-osmotic Pumping for Dewatering Sewage Sludge	14-12-406	1707	83,280

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
Rocketdyne, Division of North American Rockwell Corp. Canoga Park	Pyrographic Determination of Pollutants in Wastewater	14-12-424	1604 1605	$ 84,500
Rocketdyne, Division of North American Rockwell Corp. Canoga Park	Development Program for Treatment of Wastewater by Aeration	14-12-434	1101	65,270
Santee County Water District Santee	Reclamation of Biologically, Mechanically and Chemically Treated Wastewater for Potable Water Supply Uses Employing Carbon Adsorption, Electrodialysis, and Chlorination Treatments	14-12-444	1704	148,733
University of California Berkley	Removal of Refractory Organic Contaminants from Wastewater by Synthetic Resins	14-12-28	1702	58,769*
Water Resources Engineers, Inc. Walnut Creek	Formulation of a General Mathematical Model for the Prediction of Thermal Changes in Impoundments	14-12-422	1613	46,283
CONNECTICUT				
Dorr-Oliver, Inc. Stamford	Obtain Design Information and Realistic Cost Data for Certain Wastewater Treatment Process	14-12-60	1609	15,200*
Dorr-Oliver Inc. Stamford	Development of a Powdered Carbon Regeneration Device	14-12-59	1702 1703	67,485*

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LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
CONNECTICUT				
General Dynamics Groton	Study of Flow Reduction and Treatment of Wastewater from Households	14-12-428	1105 1608	$ 42,932
DELAWARE				
Standard Brands Chemical Dover	Investigation of Amphipatic Water Soluble Polymers as Flocculants and Flotation Aids in Domestic Wastewater Treatment	14-12-430	1703	99,862
DISTRICT OF COLUMBIA				
Biospherics Research, Inc. Washington	Identification of Limiting Factors in the Biological Treatment of Sewage	14-12-129	1705	15,000
Biospherics Research, Inc. Washington, D. C.	Bio-Mass Determination - A New Technique for the Control of Aeration Sewage Treatment Processes	14-12-419	1705	65,606
FLORIDA				
Cordis Corp. Miami	Application of Immunochemical Techniques to the Detection and Identification of Chemical and Biological Pollutants	14-12-412	1603 1604	71,810
ILLINOIS				
General American Transportation Corp., General American Research Corp. Niles	Development of a Mathematical Model of Sewage Sludge Fluidized Bed Incinerators	14-12-415	1709	31,228

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
ILLINOIS				
General American Transportation Corp., General American Research Corp. Niles	Development of a Time Dependent Mathematical Model of the Activated Sludge	14-12-73	1705	$ 53,600*
General American Transportation Corp., General American Research Corp. Niles	Development of a Mathematical Model for Separation, Coagulation, and Sedimentation Process Using Addition of Chemicals	14-12-416	1709	41,585
IIT Research Institute Chicago	Ammonia Stripping Mathematical Model for Wastewater Treatment	14-12-193	1709	14,483
IIT Research Institute Chicago	Photolysis Mechanisms for Pollution Abatement	14-12-433	1702 1705	49,982
W. R. Grace and Company Lake Zurich	Ultimate Disposal of Phosphate from Wastewater by Recovery as Fertilizer	14-12-171	1707	125,138
INDIANA				
American Oil Company Whiting	Development and Evaluation of a Method for Determining Ammonia and Total Nitrogen in Wastewater	14-12-109	1602	41,922*
Charles Pfizer and Co., Inc. Terre Haute	Applications of Powdered Magnetic Iron Oxide to the Removal of Pathogenic Microorganisms from Water	14-12-418	1603 1706	58,402

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
MASSACHUSETTS				
Dynatech Corp. Cambridge	An Electrochemical Method for Removal of Phosphates from Wastewaters	14-12-405	1701 1702 1703	$ 44,113
Ionics Inc. Watertown	The Electro-Oxidation of Ammonia in Sewage to Nitrogen	14-12-432	1701,	30,580
Ionics, Inc. Watertown	Adjustment of Overhead and G&A Rates for FY 64 and 65, Waste Treatment Electrodialysis Pilot Plant, Lebanon, Ohio	PH-86-64-119	1704	8,286*
Process Research, Inc. Cambridge	Membrane Fouling Mechanisms in the Electrodialysis Process	14-12-91	1704	63,520*
Process Research, Inc. Cambridge	Mathematical Model of the Electrodialysis Process for Advanced Waste Treatment	14-12-410	1704	32,590
Process Research, Inc. Cambridge	Selective Nitrate and Phosphate Removal	14-12-179	1701	50,558
Tyco Laboratories Waltham	Basic Salinogen Ion Exchange Resins for Selective Nitrate Removal from Potable and Effluent Waters	14-12-439	1701	97,628
MICHIGAN				
University of Michigan Ann Arbor	Effect on Water Temperature and/or Dissolved Oxygen Requirements on Selected Mollusks	14-12-441	1805	143,882

*Active in FY-1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
MISSOURI				
Midwest Research Institute Kansas City	Research and Field Engineering Studies for Optimizing Lipid Biostabilization Processes	14-12-198	1705	$ 59,813
Midwest Research Institute Kansas City	An Investigation of Light-Catalyzed Chlorine Oxidation for Treatment of Wastewater	14-12-72	1701 1702 1706	24,972 24,988*
Midwest Research Institute Kansas City	Oxygenation of Aqueous Bodies Using Liquid Oxygen "Loxination"	14-12-168	1702 1705 1706	72,861
MONTANA				
University of Montana Missoula	Water Quality Requirements of Aquatic Insects	14-12-438	1805	72,750
NEW JERSEY				
Arde Inc. Paramus	Applicability of ARDOX Catalysts to the Oxidation of Municipal Sewage Effluents and of Wastes Produced During Manned Space Flight	14-12-141	1702 1705 1706	69,935
Burns and Roe, Inc. Oradell	A Study to Develop the Concept of the D. C. Biological Treatment Plant	14-12-151	1705	2,000
FMC Corp. Princeton	Fluidized Carbon Contacting	14-12-76	1702	94,000*
FMC Corp. Princeton	Thermal Regeneration of Powdered Activated Carbon	14-12-92	1702 1703	82,451*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
NEW JERSEY				
Johns-Manville Corp. Manville	Experiments to Determine the Effectiveness of Phosphate Removal by Means of the Moving Bed Filter	14-12-154	1701 1702 1704	$ 74,946
NEW YORK				
Foster D. Snell, Inc. New York	Investigate the Feasibility of Hydrolysis of Sludge Using Low Pressure Steam with SO_2 as a Hydrolytic Adjunct and to Study Utilization of the Resulting Hydrolysate	14-12-188	1707	42,336
OHIO				
Battelle Memorial Institute Columbus	Development of a Fluidized Bed Technique for the Regeneration of Powdered Activated Carbon	14-12-113	1702 1703	55,900*
Monsanto Research Corp. Dayton	Study of Utilization and Disposal of Lime Sludges Containing Phosphates	14-12-199	1707	78,420
Ohio State University Research Foundation Columbus	Development of a Multiple Unit Natural Laboratory for the Study of Acid Mine Drainage	14-12-97	1401	39,000 40,301*
Rand Development Corp. Cleveland	Field Demonstration of Pipeline Transportation and Land Disposal of Sludge Slurries	14-12-30	1707	264,753 683,000*
OREGON				
Neptune Microfloc, Inc. Corvallis	Modifications to the Pumping Station at Shagwa Lake Field Site, Ely, Minnesota	14-12-5	1601	5,125

*Active in FY-1968 - Supported by funds awarded in previous.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
OREGON				
Oregon State University Corvallis	Mathematical and Computer Services for the Analysis of Data nd Design of Experiments for Certain Water Pollution Control Administration Programs	14-12-440	1607	14,100
PENNSYLVANIA				
Cyrus Wm. Rice and Company Pittsburgh	Use of Inert Gases to Eliminate Acid Pollution from Abandoned Mines	14-12-404	1401	13,584
Cyrus Wm. Rice and Company Pittsburgh	The Use of Inert Gases to Eliminate Pollution from Abandoned Mines	14-12-98	1401	25,000*
MSA Research Corp. Evans City	Investigation of the Regeneration of Spent Granular Activated Carbon	14-12-107	1702 1703	55,100*
Roy F. Weston West Chester	A Study to Develop the Concept of the District of Columbia Biological Treatment Plant	14-12-147	1705	2,000
Swindell-Dressler Company Pittsburgh	A Conceptual Study of the District of Columbia Biological Treatment Plant	14-12-149	1705	2,000
Swindell-Dressler Company Pittsburgh	Appraisal of Granular Carbon Contacting	14-12-105	1702 1703	64,868*
RHODE ISLAND				
University of Rhode Island Kingston	Collection and Establishment in Culture of Species and Strains of Marine Phytoplanktonic Organisms	14-12-447	1805	128,085

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
UTAH				
Utah State University Research Foundation Logan	Investigation of the Characteristics and Pollutional Problems of Irrigation Return Flows	14-12-408	1303	$ 34,521
WASHINGTON				
Battelle Memorial Institute Richland	Evaluation of Operating Parameters of Alumina Columns for the Select Removal of Phosphorus from Wastewaters and Ultimate Disposal of Phosphorus as Calcium Phosphate	14-12-413	1701 1707	38,000
WISCONSIN				
Rex Chainbelt, Inc. Milwaukee	A Mathematical Model for the Final Clarifier of an Activated Sludge Process	14-12-194	1709	72,316
University of Wisconsin Madison	Algal Bioassay to Determine the Extent of Nutrient Removal by AWT at the Waste Treatment Plant at Ely, Minnesota	14-12-145	1601	3,750

WATER POLLUTION CONTROL

DEMONSTRATION GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATES

State	Institutions and Agencies	Number Awarded	Amount Awarded
Alaska	1	1	$ 14,059
Arizona	2	2	130,087
California	3	3	216,075
Colorado	1	1	25,300
Connecticut	1	1	39,056
District of Columbia	2	2	85,840
Florida	3	3	261,499
Illinois	1	1	10,000
Indiana	2	3	131,623
Kansas	1	1	18,378
Louisiana	1	1	26,713
Maryland	1	1	39,627
Massachusetts	1	1	20,460
Michigan	2	2	69,500
Minnesota	3	3	113,671
Missouri	2	2	26,685
New Jersey	2	2	141,428
New York	5	5	426,209
Ohio	3	3	79,373
Oklahoma	1	1	12,340
Puerto Rico	1	1	46,252
South Dakota	1	1	13,033
Tennessee	1	1	25,020
Texas	2	2	83,037
Utah	2	2	74,127
Wisconsin	1	1	61,943
Wyoming	1	1	34,037
Foreign	1	1	14,890
27 States	48	49	$ 2,240,262

Active Demonstration Grants 1968

15 States
26 Institutions and Agencies
27 Demonstration Grants

WATER POLLUTION CONTROL

DEMONSTRATION GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 5 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
ALASKA				
University of Alaska College				
Murphy, R. Sage, Ph.D. Dept. of Environmental Health Engineering	Evaluation of an Oxidation Ditch Wastewater Treatment Plant in Sub-artic Alaska	WPD-207-02	1101	$ 14,059
ARIZONA				
Salt River Project Phoenix				
Shipley, Henry Assistant General	Spreading Treated Sewage for Groundwater Recharge	WPD-140-02	1606	12,300
City of Tucson Tucson				
Brooks, Frank Director of Water and Sewers	Tucson Wastewater Reclamation Project	WPD-108-04	1708	118,087

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
Eastern Municipal Water District Hemet				
Boen, Doyle F. General Manager & Chief Engineer	Reutilization of Wastewater Recycled through Groundwater	WPD-81-03	1606	——*
Lake Tahoe Area Council South Lake Tahoe				
McGauhey, P. H. Chairman, Board of Consultants	Demonstration Project on Eutrophication of Surface Waters - Lake Tahoe	WPD-48-03	1601	74,000
Los Angeles County Los Angeles				
Lambie, John A. County Engineer	Wastewater Reclamation Project for Antelope Valley	WPD-50-04	1708	——*
Orange County Water District Santa Ana				
Owen, Langdon W. District Engineer	Reclamation of Wastewaters for Injection Underground	WPD-110-02	1708	——*
Sacramento County Dept. of Public Works Sacramento				
Wanderer, W. C., Jr. Chief, Utilities Division	Primary Treatment and Sludge Dewatering by Vibrating Screens	WPD-177-02	1703	27,785

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
City of San Diego San Diego				
Cook, Leland, Jr., Superintendent, Utilities Dept.	Sewage Odor Control by Liquid-Gas Extraction	WPD-135-01	1705	____*
City of San Jose San Jose				
Belick, Frank M. Engineer-Superintendent	Reducing Waste Activated Sludge Volume by Anaerobiosis	WPD-129-02	1707	____*
Stanford University Stanford				
Eliassen, Rolf, Ph.D. Dept. of Civil Engineering	Reclamation of Reusable Water from Sewage	WPD-21-05	1708	____*
State of California Water Resources Sacramento				
Beck, Louis A. Senior Sanitary Engineer	Nutrient Removal from Agricultural Wastewater	WPD-143-02	1303	114,290
COLORADO				
Beet Sugar Development Foundation Fort Collins				
Fischer, James H. Manager	Anaerobic-Aerobic Sugar Beet Waste Treatment	WPD-93-04	1206	25,300

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
CONNECTICUT				
University of Connecticut Storrs				
Klei, Herbert, E., Ph.D. Dept. of Chemical Engineering	Automatic Control of a Completely Mixed Activated Sludge Reactor	WPD-175-02	1703 1705	$ 39,056
DISTRICT OF COLUMBIA				
League of Women Voters-Education Fund Washington				
Whittemore, Arthur E., (Mrs.) Trustee, Chairman, Water Resources Projects	Schools for Citizens on the Use of Water for Tomorrow's Living	WPD-62-04S1 WPD-62-05	1609	10,590 49,450
National Association of Counties Research Foundation Washington				
Hillenbrand, Bernard F. Executive Director	Public Officials Water Pollution Control Demonstration Project	WPD-55-04	1609	______*
Water Pollution Control Federation Washington				
Burke, George W., Jr. Manager, Technical Services	Aids for Wastewater Systems Personnel Safety and Advancement	WPD-159-02	1101	25,800
Burke, George W., Jr. Manager, Technical Services	Development of Lecture Guides for Wastewater Treatment Plant Operators	WPD-45-02	1709	______*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
FLORIDA				
Florida Atlantic Ocean Sciences Institute, Inc. Boca Raton				
McAllister, Raymond F., Ph.D. Dept. of Oceanography	Demonstration of the Limitations and Effects of Waste Disposal on an Ocean Shelf	WPD-165-02	1607	$149,731
City of Gainesville Gainesville				
Black, A. P., Ph.D. Research Professor Emeritus	Disinfectant and Physiological Effects of Iodine for Treatment of Polluted Water Supplies	WPD-19-06	1706	80,000
Orange County Florida Department of Water Conservation Orlando				
Sheffield, C. W. Department Head	Field Evaluation of Reaerating Surface Waters	WPD-213-01	1608	31,768
ILLINOIS				
Izaak Walton League of America, Inc. Glenview				
Penfold, Joseph W. Conservation Director	Citizen Workshops on Clean Waters for America	WPD-128-02S1	1701	10,000
INDIANA				
Rose Polytechnic Institute Terre Haute				
Arthur, Robert M., Ph.D. Dept. of Bioengineering	Automatic Recording of Short Term B.O.D.	WPD-141-02	1602	10,480

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
INDIANA				
University of Notre Dame Notre Dame				
Tenney, Mark W., Ph.D. Dept. of Environmental Health Engineering	Effects of Domestic Pollution Abatement on a Eutrophic Lake	WPD-126-03	1601	$ 30,031
Tenney, Mark W., Ph.D. Dept. of Environmental Health Engineering	Removal of Organic and Eutrophying Pollutants by Combined Chemical and Biological Treatment	WPD-224-01	1701 1705	91,112
IOWA				
University of Iowa Iowa City				
Smith, H. Sidwell, Ph.D. Dept. of Civil Engineering	Homogeneous (Totally Mixed) Activated Sludge Applications	WPD-138-01	1707	________*
KANSAS				
University of Kansas Lawrence				
McKinney, Ross E., Ph.D. Dept. of Civil Engineering	Cattle Feedlot Wastewater Treatment	WPD-123-03	1304	18,378
LOUISIANA				
Tulane University New Orleans				
MacDonald, Frank W., Ph.D. Dept. of Civil Engineering and Public Health	Bedding and Infiltration Studies of Sanitary Sewers in the Gulf Coast Area	WPD-80-04	1102	26,713

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MARYLAND				
The John Hopkins University Baltimore				
Liebman, Jon C., Ph.D. Dept. of Environmental Engineering	Optimization of Regional Waste Treatment Facilities	WPD-125-02	1709	______*
Renn, Charles E., Ph.D. Dept. of Environmental Engineering	Management of Recycled Waste Process Water Ponds	WPD-117-03	1201	39,627
MASSACHUSETTS				
Massachusetts Health Research Institute, Inc. Boston				
Bridges, Colton H., Co-Director Supt., Bureau of Wildlife Research and Management	Massachusetts Pesticide Monitoring Demonstration	WPD-88-04	1602	20,460
MICHIGAN				
City of Jackson Jackson				
Greene, Robert A., Supt. of Sewage Treatment	Supplementary Aeration Demonstration for Secondary Effluent	WPD-157-01	1707	______*
City of Trenton Trenton				
Hennessey, Timothy L. City Engineer	Phosphate Removal by Biological Process	WPD-173-02	1701	46,500

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MICHIGAN				
University of Michigan Ann Arbor				
Brown, Robert M., President National Sanitation Foundation	Development of Criteria for Packaged Compact Sewage Treatment Plants	WPD-74-03	1709	———*
Mancy, K.H., Ph.D. School of Public Health	Application of Programmed Learning to Water Chemistry	WPD-139-02	1602	23,000
MINNESOTA				
Minnesota State Department of Health Minneapolis				
Bauer, Henry Deputy Executive Officer	Demonstration of the Channel Aeration Process in Treatment of Sewage	WPD-33-04	1101	31,397
St. Mary's College Winona				
McNabb, C. D., Ph.D. Dept. of Biology	Undergraduate Training for Careers in Water Supply and Pollution Control	WPD-144-03	1609	20,274
State of Minnesota Department of Iron Range Resources and Rehabiliation St. Paul				
Deyoannes, A. M. Commissioner	Peat Bog Waste Stabiliation	WPD-164-02	1701 1703 1705	62,000

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
MISSOURI				
City of Kansas City Kansas City				
Popalisky, J.R., Chief Water Supply Division	Organics Causing Taste or Odor in Missouri River	WPD-201-01	1801	$ 14,675
Missouri Department of Conservation Fisheries Division Jefferson City				
Whitley, James R., Supervisor Water Quality Branch	Control of Undesirable Aquatic Vegetation in Lake Taneycona, Missouri	WPD-222-01(R1)	1601	12,010
NEW JERSEY				
Delaware River Basin Commission Trenton				
Wright, James F. Executive Director	Interstate Regional Planning for Water Supply and Waste Disposal	WPD-136-03	1609	79,996
Division of Fish and Game Bureau of Fisheries Management Trenton				
Pyle, A. Bruce Principal Fisheries Biologist	Fish and Aquatic Life Consideration in New Jersey's Water Pollution Abatement Program	WPD-4-06	1805	______*

*Active in FY 1968 - Supported by funds awarded in previous years.

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LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS.NO.	AMOUNT
NEW JERSEY				
Rutgers - The State University New Brunswick				
Whipple, William Jr., Director Water Resources Research Institute	Oxygen Regeneration of Polluted Rivers	WPD-131-02	1608	$61,432
NEW MEXICO				
New Mexico State University Las Cruces				
Speece, R. E., Ph.D. Dept. of Civil Engineering	Diffused Air U-Tube Oxygenation in an Oxidation Pond	WPD-202-01	1709	———*
NEW YORK				
Health Research Inc. New York State Dept. of Health Albany				
O'Brien, James E. Division of Laboratories Research	To Evaluate the Utility of Existing Automatic Chemical Analysis Equipment for Water Quality Surveillance Under Computer Control	WPD-119-02	1602	67,673
County of Nassau Mineola				
Simins, Herbert J. Commissioner of Public Works	Water Conservation by Waste Water Reclamation and Injection for Recharge	WPD-71-03	1708	———*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NEW YORK				
National Pollution Control Foundation Inc. New York				
Moshy, Raymond J., Ph.D. Staff V.P. & Director-Research American Machine & Foundry Co.	Pollution Control of Bathing Beaches by Use of a Pneumatic Curtain	WPD-229-01	1501 1508	$173,283
Rensselaer Polytechnic Institute Troy				
Aulenbach, Donald B., Ph.D. Dept. of Environmental Engineering	Removal of Syndets and Reclamation of Laundry Wastes	WPD-99-01	1705	______*
New York State Dept. of Health Albany				
Hetling, Leo J., Director Research Unit, Environmental Health Services	Treatment Needed by Sewage Before Injection-Well Recharge	WPD-83-04	1708	58,000
Soap & Detergent Association New York				
Brenner, Theodore E. Research Director	Phosphorus Removal in the Activated Sludge Process	WPD-220-01	1701	108,116
State University College Brockport Research Foundation Brockport				
Damann, Kenneth E., Ph.D. Dept. of Biological Sciences	Renovation of a Dystrophic Lake into a Eutrophic Lake	WPD-180-02	1601	19,337

*Active in FY 1968- Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
NORTH DAKOTA				
North Dakota State Dept. of Health Bismark				
Van Heuvelen, Willis Chief, Environmental Health and Engineering Services	Anaerobic Fermentation-Aerobic Stabilization Process for Treating Waste Whey with Domestic Waste	WPD-155-01	1206	——*
Van Heuvelen, Willis Chief, Environmental Health and Engineering Services	Treatment of Waste from the Manufacture of Potato Starch by Anaerobic Fermentation-Aerobic Stabilization	WPD-94-03	1206	——*
OHIO				
City of Cincinnati Cincinnati				
Caster, Arthur D. Superintendent, Division of Water Pollution Control	Nitrogen Removal in Municipal Waste Treatment	WPD-151-01	1701	——*
City of Dayton Dayton				
Tossey, Defro Superintendent, Sewage Treatment	Tertiary Treatment by Flocculation and Rapid-Sand Filtration	WPD-114-03	1703	10,942

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
OHIO				
Ohio State University Athens				
Kaneshige, Harry M., Ph.D. Dept. of Civil Engineering	Operational Demonstration of Oxidation Ditch Method of Waste Treatment	WPD-100-03	1101	39,106
University of Cincinnati Cincinnati				
Eye, David J. Dept. of Environmental Health Engineering	Treatment of Total Wastes from a Sole Leather Tannery	WPD-185-02	1212	29,325
OKLAHOMA				
University of Oklahoma, Research Institute Norman				
Reid, George W., Ph.D. Dept. of Sanitary Science and Public Health	Demonstrating the Effect of Nutrients in Oxidation Pond Receiving Streams	WPD-98-03	1601	12,340
OREGON				
Oregon State University Corvallis				
Burgess, Fredrick J., Ph.D. Dept. of Civil Engineering	Water Reuse Quantity-Quality Effect on Treatment Process	WPD-90-03	1708	*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
PENNSYLVANIA				
Pennsylvania State University University Park				
Farrell, Michael A. Director, Agricultural Experiment Station	Renovation of Sewage Effluent for Reuse as a Water Resource	WPD-95-03	1708	______*
Villanova University Villanova				
Clarke, Edgar W., Ph.D. Dept. of Chemical Engineering	Elimination of Water Pollution by Used Oil Re-Refining Plants	WPD-174-01	1508	______*
PUERTO RICO				
Agricultural Exp. Station University of Puerto Rico Rum Pilot Plant Rio Piedras				
Guzman, Ramon M. Aqueduct and Sewage Authority	Disposal of Rum Distillery Wastes	WPD-226-01	1206	46,252
SOUTH DAKOTA				
General Beadle State College Madison				
Brashier, Clyde K., Ph.D. Dept. of Biology	A Study to Evaluate the Effect of Silt Removal in a Northern Prairie Lake	WPD-218-01	1601	13,033

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
TENNESSEE				
Vanderbilt University Nashville				
Krenkel, Peter A., Ph.D. Dept. of Sanitary and Water Engineering	Turbulent Diffusion and Reaeration in Natural Rivers	WPD-168-02	1605	$ 25,020
TEXAS				
North Texas State University Denton				
Guthrie, Rufus, Ph.D. Dept. of Biology	Rapid Identification of Microbial Populations in Water	WPD-146-02	1603	16,100
San Antonio River Authority Water Quality and Supply Division San Antonio				
Koch, C. Thomas Engineering Assistant	Drying Characteristics of Aerobically Digested Sludge	WPD-182-01	1707	——*
University of Texas Medical Branch Galveston				
Connell, C. H., Ph.D. Dept. of Preventive Medicine and Community Health	Phosphorus Removal and Disposal from Municipal Wastewater	WPD-223-01	1701	66,937

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
UTAH				
Utah State University Logan				
Hendricks, David W., Ph.D. Utah Water Research Laboratory	Sequential Water Use Within a Hydrologic Complex	WPD-17-03	1608	37,390
Woffinden, Duard S. Utah Water Research Laboratory	Continuation of Water Quality Telemetry Project	WPD-179-02	1602	36,737
VIRGINIA				
Individual				
Strandberg, Carl H. Fairfax	Aerial Water Quality Reconnaissance Demonstration	WPD-20-03 WPD-20-03(S1)	1608	______*
University of Virginia Charlottesville				
Parker, Clinton E., Ph.D. Dept. of Civil Engineering	An Anaerobic-Aerobic Lagoon for Treating Vegetable Tannins	WPD-199-01	1206	______*
WASHINGTON				
University of Washington Seattle				
Oglesby, Ray T., Ph.D. Dept. of Civil Engineering	Dilution Effects on Nutrients and Productivity in Receiving Waters	WPD-38-03	1605	______*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR	PROJECT TITLE	GRANT NO.	PPBS. NO.	AMOUNT
WASHINGTON				
Washington State University Pullman				
Proctor, Donald E., Ph.D. Dept. of Sanitary Engineering	Anaerobic-Aerobic Lagoon Treatment of Dairy Manure Wastes	WPD-184-01	1605	______*
WISCONSIN				
Sewerage Commissioner of the City of Milwaukee Milwaukee				
Ernest, Lawrence A. Laboratory Director	Sewage Phosphorus Removal by an Activated Sludge Plant	WPD-188-02	1701	61,943
WYOMING				
University of Wyoming Laramie				
Champlin, Robert L., Ph.D. Dept. of Civil Engineering	Supplementary Aeration of Lagoons in Rigorous Climate Areas	WPD-133-02	1705	34,037
FOREIGN				
AUSTRALIA				
Melbourne Water Science Institute Melbourne				
Parker, Cecil D. Director	Cannery Waste Treatment by Lagoons and Oxidation Ditches	WPD-211-01	1206	14,890

*Active in FY 1968 - Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

STORM AND COMBINED SEWER GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATES

State	Number of Municipalities	Number Awarded	Amount Awarded
Michigan	1	1	$ 500,250
New Hampshire	1	1	559,080
New Jersey	1	1	474,000
New York	1	1	843,750
Ohio	1	1	325,162
Texas	1	1	828,750
6 States	6	6	$ 3,530,992

Active Storm and Combined Sewer Grants 1968

11 States
15 Municipalities
15 Grants

WATER POLLUTION CONTROL

STORM AND COMBINED SEWER GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)1 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
IDAHO					
City of Meridian Meridian	Reduction of Ground Water Infiltration into Sewers by Zone Pumping	29-IDA-2	1102	25,000	18,375*
ILLINOIS					
City of Chicago Chicago	Lawrence Avenue Overflow Sewer System	31-ILL-6	1102	14,389,600	1,500,000*
City of Shelbyville Shelbyville	Systems Approach to Combined Sewer Storm Water Overflow Pollution Abatement	24-ILL-4	1102	2,640,760	440,000*
Springfield Sanitary District Springfield	Evaluation of a Stabilization Pond for Treatment of Combined Sewer Overflows	3-ILL-1	1102	199,140	86,570*
INDIANA					
East Chicago Sanitary District East Chicago	East Chicago Treatment Lagoon	11-IND-1	1102	3,116,533	1,044,120*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
LOUISIANA					
Sewerage and Water Board New Orleans	Chlorination and Hypochlorination of Polluted Storm Water Pumpage	14-LA-1	1102	1,429,000	1,034,250*
MASSACHUSETTS					
Metropolitan District Commission Boston	The Construction of a Storm Detention and Chlorination Station	7-MASS-1	1102	4,345,650	1,000,000*
MICHIGAN					
City of Detroit Board of Water Commissioners Detroit	System Monitoring and Remote Control	4-MICH-1	1102	2,113,000	1,000,000*
City of Mt. Clemens Mt. Clemens	A Combined Sewerage Collection and Treatment Facility	37-MICH-2	1102	667,500	500,250
MINNESOTA					
Minneapolis-St. Paul Sanitary District St. Paul	Dispatching System for Control of Combined Sewer Losses	1-MINN-1	1102	1,741,500	870,750*
City of South St. Paul South St. Paul	Efficiency and Economy of Polymeric Sewage Clarification	WPRD-111-01	1102	845,159	450,000*
NEW HAMPSHIRE					
City of Somersworth Somersworth	Somersworth Combined Sewage Overflow Treatment Project	30-NH-1	1102	931,800	559,080

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
NEW JERSEY					
Borough of New Providence New Providence	Utilization of High Rate Trickling Filters for Treatment of Combined Sewer Overflows	34-NJ-1	1102	637,500	474,000
NEW YORK					
City of New York New York	Evaluation of Spring Creek Auxiliary Pollution Control Project	36-NY-2	1102	1,126,000	843,750
City of New York New York	Wards Island Water Pollution Control Plant Ponsor Flow Regulating Siphon	25-NY-1	1102	223,000	167,250*
OHIO					
City of Cleveland Cleveland	A Program for Demonstrating Combined Sewer Overflow Control Techniques for Water Quality Improvement and Beach Protection	WPRD-234-01	1102	1,030,000	325,162
City of Columbus Columbus	Modification of Whittier Street Storm Stand-by Tanks	27-OHIO-1	1102	1,231,519	300,000*
TEXAS					
City of Dallas Dallas	Stormwater Treatment Facilities	WPRD-35-Tex-1	1102	1,105,000	828,750

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
WASHINGTON					
Municipality of Metropolitan Seattle Seattle	Duwamish River-Elliot Bay Storm Water Control System	13-WASH-1	1102	3,891,900	1,400,000*
WISCONSIN					
City of Chippewa Falls Chippewa Falls	Utilization of a Storage Pond with Treatment for Combined Sewer Overflows	22-WIS-2	1102	773,983	289,685*
City of Milwaukee Milwaukee	Humboldt Avenue Overflow Detention and Chlorination Facility	10-WIS-1	1102	2,118,118	1,468,589*

*Active in FY 1968 - Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

STORM AND COMBINED SEWER CONTRACTS FISCAL YEAR 1968

SUMMARY OF CONTRACT AWARDS BY STATES

State	Number of Contractors	Number Awarded	Amount Awarded
California	4	5	$ 886,277
District of Columbia	2	2	687,367
Illinois	1	1	250,000
Maryland	2	2	306,017
Michigan	1	1	52,604
Nebraska	1	1	301,200
New York	1	1	343,210
Ohio	2	2	634,913
Oklahoma	1	1	61,285
Oregon	1	1	139,331
Pennsylvania	2	2	409,600
Rhode Island	1	1	32,733
Texas	1	2	172,702
Virginia	1	1	411,305
Wisconsin	1	1	586,515
15 States	22	24	$ 5,275,059

Active Storm and Combined Sewer Contracts 1968

7 States
9 Contractors
9 Contracts

WATER POLLUTION CONTROL

STORM AND COMBINED SEWER CONTRACTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)1 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
Acoustica Associates Los Angeles	Demonstrate Feasibility of Use of Ultrasonic Filtration in Treating Overflows from Combined and/or Storm Sewers	14-12-23	1102	$ 75,693*
Aerojet-General Corp. El Monte	A Method for Assessing the Extent of Pollution from Storm Water Run-off in an Urban Area	14-12-197	1102	402,594
Aerojet-General Corp. El Monte	Role of Solids in Combined Sewage Pollution	14-12-180	1102	92,605
American Process Equipment Corp. Los Angeles	Fabrication and Evaluation of a Ultrasonic System for Treating Sewage	14-12-195	1102	248,500
FMC Corporation Santa Clara	Feasibility of a Periodic Flushing System for Combined Sewer Cleansing	14-12-19	1102	31,093*
FMC Corporation Santa Clara	Feasibility of a Periodic Flushing System for Combined Sewer Cleansing	14-12-19	1102	1,278
Metcalf & Eddy, Inc. Engineers Palo Alto	Engineering Investigation of the East Bay Municipal Utility District of the San Francisco Bay Area (Oakland)	14-12-407	1102	141,300

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
DISTRICT OF COLUMBIA				
Economic Systems Corp., AYCO Washington	Develop the Relation between Land-Use Practices and Influence of Pollution in Urban Storm Water	14-12-187	1102	$114,300
Underwater Storage Inc. Washington	Demonstrate Underwater Facility to Provide Temporary Storage of Storm Overflows from a Combined Sewer	14-12-42	1102	97,714*
Underwater Storage Inc. and Silver Schwartz Ltd. Washington	Pilot Demonstration Underwater Storage Facility for Storm Water Overflow	14-12-139	1102	573,067
ILLINOIS				
American Public Works Assn. Chicago	Study Methods for Reducing Water Pollution from Storm Sewer and Combination Discharges through Defined Public Work Practices	WA-66-23	1103	104,000*
American Public Works Assn. Chicago	The Problems of Combined Sewer Facilities and Overflows in United States Communities	14-12-65	1102	250,000
MARYLAND				
Hercules Incorporated Cumberland	A Feasibility Study of Utilizing a Self-Cleaning, Self- Adjusting Spiralloy Filter	14-12-39	1102	108,293
Hittman Associates Baltimore	System Study, Design and Evaluation of Local Storage, Treatment and Reuse of Water	14-12-20	1103	197,724

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
MICHIGAN				
Dow Chemical Company Midland	Demonstrate the Use of Polymeric Flocculants for Improved Efficiency in the Treatment of Combined Sewer Overflows at the Milk River Pumping Station	14-12-9	1102	$700,000*
Dow Chemical Company Midland	Rock Creek Clarification Project (Washington, D. C.)	14-12-170	1102	52,604
NEBRASKA				
Henningson, Durham & Richardson Omaha	An Engineering Investigation of Storm and Combined Sewer Problems	14-12-402	1102	301,200
NEW YORK				
American Society of Civil Engineers New York	Feasibility and Development of New Methods of Separating Sanitary Sewage from Combined Sewerage Systems	14-12-29	1102	343,210
OHIO				
Burgess & Nipple, Limited Consulting Engineers Columbus	Develop the Relation Between Land-Use Practices and Increase of Pollution in Urban Stormwater	14-12-401	1102	136,665
Havens and Emerson Consulting Engineers	Feasibility Study and a Preliminary Design of a Full-Scale Stabilization Retention Basin to be Installed in Lake Erie and to Serve the Demonstration Area Within the Easterly Sewer District	14-12-27	1102	87,616*
Karl R. Rohrer Associates Akron	Design, Construction and Operation of a Facility to Demonstrate Offshore Underwater Temporary Storage of Storm Overflow from a Combined Sewer	14-12-143	1102	498,248

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
OHIO				
Rand Development Corporation Cleveland	Design, Construction, Operation and Evaluation of a Rapid-Flow Combustile Filter for Treatment of Combined Sewer Overflow	WA-67-2	1102	$300,000*
OKLAHOMA				
Rhodes Corporation Oklahoma City	Demonstration Project of a Prototype Treatment Plant Designed to Treat Wastes Found at a Combined Sewer Overflow	14-12-11	1102	256,448*
Rhodes Corporation Oklahoma City	Demonstration Project of a Prototype Treatment Plant Designed to Treat Wastes Found at a Combined Sewer Overflow	14-12-11	1102	61,285
OREGON				
Cornell, Howland, Hayes and Merrifield Corvallis	Primary Treatment of Storm Water Overflow from Combined Sewers by High Rate Fine Mesh Screens	14-12-128	1102	139,331
PENNSYLVANIA				
Glenfield and Kennedy Inc. King of Prussia	Microstraining Pilot Tests	14-12-136	1102	186,086
R. F. Weston West Chester	Develop and Demonstrate a Method for Assessing the Extent of Pollution from Storm Water Run-off in an Urban Area	14-12-403	1102	223,514
RHODE ISLAND				
Fram Corporation Providence	Feasibility Investigation of a Self-Cleaning Strainer and a Self-Cleaning Filter	14-12-17	1102	32,733

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
TEXAS				
Western Company Richardson	Methods to Reduce Water Pollution Caused by Storm Water Sewer Loading by Using Fluid Flow Friction Reducers	14-12-34	1102	300,178*
Western Company Richardson	Methods to Reduce Water Pollution Caused by Storm Water Sewer Loading by Using Fluid Flow Friction Reducers	14-12-34	1102	76,000
Western Company Richardson	Development and Demonstration of Materials to Reduce or Eliminate Water Infiltration Into Sewerage	14-12-146	1102	96,702
VIRGINIA				
Melpar, Incorporated Falls Church	Construction of a Facility to Demonstrate Off-Shore Underwater Temporary Storage of Storm Overflow From a Combined Sewer	14-12-133	1102	411,305
WISCONSIN				
Allis-Chalmers Milwaukee	Design, Construction, Operation and Evaluation of a Demonstration Waste Treatment Device Termed the Rotating Biological Contactor	14-12-24	1102	388,526
Rex Chainbelt, Inc. Milwaukee	Demonstration of the Applicability of Screening and Chemical Oxidation of Storm and Combined Sewage	14-12-40	1102	197,989

*Active in FY 1968 - Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

ADVANCED WASTE TREATMENT GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATE

State	Municipalities	Number Awarded	Amount Awarded
Arkansas	1	1	$ 153,569
California	2	2	637,125
Colorado	1	1	47,289
District of Columbia	1	1	300,000
Florida	1	1	300,000
Illinois	1	1	346,182
Iowa	1	1	392,700
Louisiana	1	1	112,500
Maryland	2	2	418,660
Missouri	1	1	24,092
New York	2	2	728,275
Ohio	2	2	343,728
Oregon	1	1	325,104
Pennsylvania	1	1	88,230
Texas	2	2	345,590
Washington	1	1	565,318
Wisconsin	1	1	261,258
17 States	22	22	$ 5,389,620

Active Advanced Waste Treatment Grants 1968

8 States
14 Municipalities
14 Grants

WATER POLLUTION CONTROL

ADVANCED WASTE TREATMENT GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)2 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
ARKANSAS					
City of Jacksonville Jacksonville	Demonstration of a Facility for the Biological Treatment of a Complex Chlorophenolic Waste	WPRD-246-01	1106	243,313	153,569
CALIFORNIA					
City of Chino Chino	Tertiary Activated Sludge Treatment to Reclaim Wastes for Water Supply for Agricultural and Recreational Purposes	WPRD-16-01	1705	750,300	560,000*
County Sanitation District No. 2 of Los Angeles County Los Angeles	Basic Research on Sulfide Occurence and Control in Sewage Collections System	WPRD-171-01	1101	200,000	73,125
Eastern Municipal Water District Hemet	Reverse Osmosis to Remove Dissolved Solids from Reclaimed Wastewater Used in Ground Water Recharge Program	WPRD-4-01	1708	300,000	225,000*
Improvement District No. 1 of Irvine Ranch Water District Irvine	Tertiary Sewage Treatment for Reuse	WPRD-59-01	1708	465,000	325,500*
Los Angeles County Board of Supervisors Los Angeles	Antelope Valley Wastewater Reclamation Project	WPRD-97-01	1708	1,237,700	564,000

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. No.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
CALIFORNIA					
City of San Buenaventura Ventura	Integrated Activated Sludge Biological Filter Process	WPRD-2-01	1705	120,301	90,226*
City of San Jose San Jose	BOD, Solids, and Nutrient Removal from Secondary Effluent by Foam Fractionation	WPRD-30-01	1703	53,870	36,100*
Santee County Water District Santee	Renovation of Waste Effluent for Recreation and Potable Water Supply Use	WPRD-5-01	1708	1,700,000	800,000*
South Tahoe Public Utility District South Lake Tahoe	Recovery and Reuse of Lime as a Coagulant in Tertiary Treatment and Nitrogen Removal from Tertiary Treated Effluent	WPRD-52-01	1701	2,044,000	1,022,000*
COLORADO					
City of Colorado Springs Colorado Springs	Tertiary Treatment of Sewage Plant Effluent Reuse-Pikes Peak	WPRD-75-01	1708	63,052	47,289
DISTRICT OF COLUMBIA					
D. C. Government Dept. of Sanitary Engineering Washington	Use of Modified Activated Sludge Treatment to Achieve Nutrient Removal and to provide Consistent Feed to Tertiary Treatment System	WPRD-50-01	1705	400,000	300,000*
D. C. Government Dept. of Sanitary Engineering Washington	Use of Modified Activated Sludge Treatment to Achieve Nutrient Removal and to Provide Consistent Feed to Tertiary Treatment System	WPRD-50-01- S1	1705	511,683	300,000

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
DISTRICT OF COLUMBIA					
D. C. Government Dept. of Sanitary Engineering Washington	Full Scale Raw Waste Water Flocculation Study	WPRD-53-01	1703	393,600	293,600*
FLORIDA					
City of Hollywood Hollywood	Aerobic Digestion of Sewage Sludge with Effluent Disposal by an Ocean Outfall	WPRD-57-01- R1	1101	594,320	300,000
ILLINOIS					
Metropolitan Sanitary District of Greater Chicago Chicago	Hanover Tertiary Plant Studies	WPRD-92-01	1101	461,576	346,182
INDIANA					
East Chicago Sanitary District East Chicago	Tertiary Treatment of Combined Storm Water Sanitary Relief Discharges and Sewerage Treatment Plant Effluent	WPRD-70-01	1101	600,000	450,000*
IOWA					
City of Cedar Rapids Cedar Rapids	Fly Ash Filter Aid of Sewage Solids Dewatering and Disposal	WPRD-158-01	1106	1,518,900	392,700
LOUISIANA					
Jefferson Parish Metarie	Study Involving Aeration to Freshen Sewage and Retard Bacterial Activity in Long Sewer Lines	WPRD-121-01-R1	1101	150,000	112,500

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
MARYLAND					
City of Hagerstown Hagerstown	A Pretreatment Study on Combined Industrial-Municipal Wastewaters	WPRD-149-01	1106	427,853	320,890
Community of St. Michaels St. Michaels	Controlled Treatment Systems-Ultraviolet Disinfection	WPRD-139-01	1706	130,360	97,770
Washington Suburban Sanitary Commission Hyattsville	Model Advanced Waste Treatment Plant	WPRD-62-01	1708	2,200,000	1,650,000*
MICHIGAN					
City of Detroit Detroit	Pilot-Scale Study of Improved Phosphate Removal by Modified Activated Sludge Process	WPRD-51-01	1701	581,200	299,800*
MISSOURI					
Metropolitan St. Louis Sewer District St. Louis	Evaluation of Odor Control by Covering A Sludge Thickner with a Styrofoam Dome	WPRD-23-01	1101	32,123	24,092
NEW YORK					
Nassau County Dept. of Public Works Mineola	Advanced Waste Treatment for Water Reclamation and Reuse by Injection	WPRD-61-01	1708	1,853,200	700,000*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
NEW YORK					
New York State Dept. of Health Albany	High Performance Bio-Treatment Process for Municipal Wastes	WPRD-143-01-R1	1705	662,147	371,125
Onondaga County Dept. of Public Works Syracuse	A Demonstration of Joint Municipal-Industrial Waste Treatment in the Onondaga Lake Watershed	WPRD-66-01	1106	507,700	357,150
OHIO					
City of Cleveland Cleveland	The Use of Organic Polyelectrolytes for Operational Improvement of Waste Treatment Processes	WPRD-102-01	1703	158,000	118,500
Lake County Painesville	Water Pollution Abatement Program for Mentor, Lake County, Ohio	WPRD-172-01-R1	1101	301,504	225,228
OREGON					
City of Dallas Dallas	Demonstrate the Economics and Efficiency of the Completely Aerobic Treatment Method When Applied to the Treatment of Combined Domestic and Industrial Wastes from a Small Municipality	WPRD-29-01	1106	463,472	325,104
PENNSYLVANIA					
City of Erie Erie	Joint Treatment of Domestic Sewage and Pulp and Paper Mill Waste	WPRD-223-01	1106	333,674	88,230
TEXAS					
City of Austin Austin	Design Guides for Selective Wastewater Treatment Processes	WPRD-178-01	1101	461,906	326,176

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
TEXAS					
City of Dallas Dallas City Water Works Dallas	A Complete Recycle Wastewater Treatment Plant	WPRD-64-01	1708	1,692,500	510,000*
San Antonio River Authority San Antonio	Contact Stabilization Operating Parameters	WPRD-205-01	1101	25,900	19,414
WASHINGTON					
Municipality of Metropolitan Seattle Seattle	Park Development with Wet Digested Sludge	WPRD-180-01-R1	1707	1,097,239	565,318
WISCONSIN					
Green Bay Metropolitan Sewerage District Green Bay	Combined Industrial and Municipal Waste Treatment	WPRD-60-01	1106	335,000	251,250*
Sewage Commission City of Milwaukee Milwaukee	Development of a System for Conditioning and Dewatering Sludge by Freezing	WPRD-71-01	1101	348,344	261,258

*Active in FY 1968- Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

ADVANCED WASTE TREATMENT CONTRACTS FISCAL YEAR 1968

SUMMARY OF CONTRACT AWARDS BY STATE

State	Number of Contractors	Number Awarded	Amount Awarded
Missouri	1	1	$ 72,861
Ohio	1	1	380,000
Pennsylvania	2	2	215,280
3 States	4	4	$ 668,141

WATER POLLUTION CONTROL

ADVANCED WASTE TREATMENT CONTRACTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)2 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
MISSOURI				
Midwest Research Institute Kansas City	Oxygenation of Aqueous Bodies Using Liquid Oxygen - "Loxination"	14-12-68	1705	72,861
OHIO				
Rand Development Corp. Cleveland	Field Demonstration of Pipeline Transportation and Land Disposal of Sludge Slurries	14-12-30	1707	380,000
PENNSYLVANIA				
Roy F. Weston Inc. West Chester	Architectual and Engineering Biological Treatment Pilot Plant and Sludge Disposal Facility (Blue Plains, Washington, D. C.)	14-12-167	1705	56,430
Yule, Jordan, and McNee Philadelphia	Design and Development of a 3.5 Million Gallon Per Day Sewerage Treatment Plant Using a Coal Treatment Process	14-12-38	1709	158,850

WATER POLLUTION CONTROL

INDUSTRIAL WASTE TREATMENT GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATE

State	Agencies and Corporations	Number Awarded	Amount Awarded
California	1	2	$ 853,739
District of Columbia	1	3	100,703
Florida	1	1	165,000
Georgia	2	3	802,776
Idaho	1	1	483,217
Indiana	1	1	170,265
Massachusetts	1	1	87,215
Minnesota	2	2	551,585
New Jersey	2	2	180,350
New York	2	2	506,970
North Carolina	3	3	650,844
Ohio	1	1	209,000
Oklahoma	1	1	75,886
Oregon	1	1	42,028
Pennsylvania	1	6	1,338,747
Tennessee	1	1	50,400
Texas	1	1	184,816
Washington	1	1	374,669
Wisconsin	1	1	483,371
19 States	25	34	$ 7,311,581

Active Industrial Waste Treatment Grants 1968

8 States
10 Agencies and Corporations
10 Grants

WATER POLLUTION CONTROL

INDUSTRIAL WASTE TREATMENT GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(b) OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
CALIFORNIA					
Aerojet-General Corp. El Monte	Demonstration of Industrial Water Renovation Plant of Odessa, Texas	WPRD-31-01	1106	323,500	226,500*
Crown Zellerbach Corp. San Francisco	Economic Optimization of Secondary Treatment and Determination of Load to Control Biological Growths in a Stream	WPRD-69-01	1204	732,627	503,739
Crown Zellerbach Corp. San Francisco	A Demonstration Plant Evaluation of Four Methods for Pulp and Paper Sludge Utilization and Disposal	WPRD-144-01	1204	848,320	350,000
FMC Corp. Santa Clara	Cannery Waste Treatment by the Kehr Activated Sludge Process	WPRD-18-01	1206	43,200	29,300*
COLORADO					
Beet Sugar Development Foundation Fort Collins	Concentration of Sugar Beet Wastes for Economic Treatment with Biological Systems	WPRD-43-01	1206	372,500	102,000*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
DISTRICT OF COLUMBIA					
National Canners Association Research Foundation Washington	Reconditioning and Reuse of Food Processing Brines	WPRD-134-01	1206	45,000	31,500
National Canners Association Research Foundation Washington	Integrated Treatment of Liquid Wastes from Food Canning Operations	WPRD-151-01	1206	55,120	33,330
National Canners Association Washington	Evaluation of Controlled Temperature and Forced Aeration and Trickling Filter Treatment of Food Canning Wastewaters	WPRD-251-01	1206	51,251	35,873
FLORIDA					
Minute Maid Company Orlando	Removal of Organics and Nutrients From Citrus Processing Plant Wastes	WPRD-38-01	1206	550,000	350,000*
Winter Garden Citrus Products Winter Garden	Lime Treatment and Inplant Reuse of an Activated Sludge Plant Effluent in the Citrus Processing Industry	WPRD-161-01	1206	442,300	165,000
GEORGIA					
Georgia Kraft Company Rome	Explore the Feasibility of Using Foam Separation for Concentrating and/or Removing Components of High BOD from Kraft Mill Wastes	WPRD-117-01	1204	68,830	48,181

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
GEORGIA					
Georgia Kraft Company Rome	Determine the Technical and Economic Feasibility of Using Cooling Towers to Reduce BOD and Heat Content of Kraft Mill Wastes and to Reduce Water Usage in Kraft Mills	WPRD-116-01	1204	411,000	287,700
Interstate Paper Corp. Riceboro	Chemical Coagulation Color Removal System for Kraft Mill Effluent	WPRD-183-01	1204	741,160	466,895
IDAHO					
R. T. French Company Shelley	Aerobic Secondary Treatment of Potato Processing Wastes with Mechanical Aeration	WPRD-15-01	1206	690,310	483,217
INDIANA					
American Oil Company Whiting	Fluid-Bed Incineration of Petroleum Refinery Wastes	WPRD-215-01	1205	354,530	170,265
IOWA					
John Morrell and Company Ottumwa	Aerobic Treatment of Packinghouse Waste	WPRD-54-01	1206	815,000	489,000*
KENTUCKY					
Caldwell Lace Leather Co. Auburn	Complete Treatment of Tannery Industrial Waste for Chrome Tanning, Alum Tanning, and Vegetable Tanning	WPRD-25-01	1212	68,200	46,340*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
MAINE					
Vahlsing, Inc. Easton	Treatment of Wastes from Potato and Sugar Beet Processing Plant by Activated Sludge	WPRD-56-01	1206	280,020	196,014*
MASSACHUSETTS					
A. C. Lawrence Leather Co. Peabody	Wastewater Treatment Pilot Plant Investigation, Mixed Chrome Tannery Wastewater and Municipal Sewage	WPRD-133-01	1212	124,593	87,215
MINNESOTA					
North Star Research and Development Institute Minneapolis	Use of Fungi Imperfecti in Waste Control	WPRD-49-01	1206	118,160	76,585
S. B. Foot Tanning Co. Red Wing	Aerobic Biological Treatment, Sludge Dewatering and Disposal and Effluent Reuse for a Side Leather Tannery	WPRD-232-01	1212	2,046,268	475,000
NEW JERSEY					
Johns-Manville Product Corporation Manville	Experimental Closed Water System to Eliminate Wastewater Discharge from Johns-Manville Plant #3, Defiance, Ohio	WPRD-87-01	1208	164,700	82,350
Metal Finishers' Foundation Upper Montclair	An Investigation of Techniques for the Removal of Chromium and Cyanides from Electroplating Wastes	WPRD-201-01	1201	145,000	98,000

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
NEW YORK					
Interstate Paper Corp. New York	Chemical Coagulation Color Removal System for Kraft Mill Effluent	WPRD-183-01	1204	741,160	466,895
RAI Research Corp. Long Island City	Improvement of Treatment of Food Industry Waste	WPRD-3-01	1206	57,250	40,075
NORTH CAROLINA					
American Enka Corporation Enka	Zinc Precipitation and Recovery Plant	WPRD-216-01-R1	1209	980,417	282,700
Fiber Industries Charlotte	Reuse of Plant Effluent and Cooling Water Blowdown as Process Water	WPRD-100-01	1209	500,000	350,000
North Carolina State Univ. Raleigh	Filtration of Kraft Pulp Liquor through Chips	WPRD-115-01	1204	25,920	18,144
OHIO					
Armco Steel Corporation Middletown	Treatment of Wastewater-Waste Oil Mixtures	WPRD-169-01	1201	1,541,720	209,000
Champion Papers, Inc. Hamilton	Improve Pollution Control by Reuse of Paper Machine Process Waters	WPRD-28-01	1204	1,030,000	700,000*
The Mead Corporation Chillicothe	Evaluation of Role of High Rate Trickling Filters & Areation Devices Separately and in Combination for the Advanced Biological Treatment of Integrated Kraft Pulp and Paper Mill Effluents	WPRD-55-01	1204	428,500	299,950*

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
OKLAHOMA					
Continental Oil Company Ponca City	Microbiological Removal of Iron from Drainage	WPRD-36-01	1401	115,996	75,886
OREGON					
Klamath Plywood Corp. Klamath Falls	Aerobic Secondary Treatment of Plywood Glue Wastes	WPRD-174-01	1210	65,040	42,028
PENNSYLVANIA					
Commonwealth of Pennsylvania Coal Research Board Harrisburg	Application of Bacteriophages to Eliminate Mine Acids	WPRD-164-01	1401	123,723	86,484
Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg	Study of the Use of Inert Cases to Eliminate Acid Pollution from Abandoned Deep Mines	WPRD-227-01	1401	54,143	37,900
Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg	Use of Latex as a Soil Sealant to Control Acid Mine Waste Drainage	WPRD-252-01	1401	259,770	181,839
Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg	Control of Mine Water Treatment Plant at Hollywood, Pennsylvania	WPRD-34-01	1401	1,000,000	700,000
Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg	Optimization and Development of Improved Chemical Techniques for the Treatment of Coal Mine Drainage	WPRD-63-01	1401	150,000	105,000

LOCATION/GRANTEE	PROJECT TITLE	GRANT NO.	PPBS. NO.	ESTIMATED TOTAL PROJECT COST	FWPCA GRANT
PENNSYLVANIA					
Commonwealth of Pennsylvania Dept. of Mine and Mineral Industries Harrisburg	Study of the Use of Insitu Precipitation of Sludge Resulting from Reaction of Mine Water with Low Cost Additives in an Abandoned Mine to Prevent Mine Drainage	WPRD-242-01	1401	325,035	227,524
TENNESSEE					
Chemical Separations Corp. Oak Ridge	Acid Pickle Liquor Waste Treatment Utilizing Advanced Ion Exchange Techniques	WPRD-41-01	1201	359,500	50,400
TEXAS					
West Central Texas Municipal Water District Abilene	North Fork Alluvial Decontamination Project	WPRD-176-01	1402	272,323	184,816
WASHINGTON					
Battelle-Northwest Environmental and Radiological Sciences Richland	Removal of Ammonia from Agricultural Runoff by Selective Ion Exchange	WPRD-26-01	1704	258,000	180,600*
Snokist Growers Yakima	Pollution Prevention by Aeration of Fruit Processing Wastes	WPRD-58-01	1206	572,262	374,669
WISCONSIN					
Pulp Manufacturers Research League, Inc. Appleton	In-Plant Treatment of Dilute Wastes of the Pulping Industry	WPRD-12-01	1204	690,530	483,371

*Active 1968 - Supported by funds awarded in previous years

WATER POLLUTION CONTROL

INDUSTRIAL WASTE TREATMENT CONTRACTS FISCAL YEAR 1968

SUMMARY OF CONTRACT AWARDS BY STATE

State	Number of Contractors	Number Awarded	Amount Awarded
California	1	1	$ 279,597
Pennsylvania	1	1	56,250
2 States	2	2	$ 335,847

WATER POLLUTION CONTROL

INDUSTRIAL WASTE TREATMENT CONTRACTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(b) OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

LOCATION/CONTRACTOR	PROJECT TITLE	CONTRACT NO.	PPBS. NO.	AMOUNT
CALIFORNIA				
Bechtel Corporation San Francisco	Technical Feasibility and Analysis of Costs and Effectiveness of Bulk Transpost of Sewage Treatment Plant Sludge and Dredging Spoils	14-12-156	1507	279,597
PENNSYLVANIA				
Cyrus Wm. Rice Co. Pittsburg	Cost Effectiveness Study for Industrial Waster Water Treatment Practices	14-12-435	1202	56,250

WATER POLLUTION CONTROL

TRAINING GRANTS FISCAL YEAR 1968

SUMMARY OF GRANTS AWARDED BY STATES

States	Institutions and Agencies	Number Awards	Amount Awarded
Arizona	1	1	$ 27,461
Arkansas	1	1	29,536
California	4	4	163,194
Colorado	2	2	93,758
Delaware	1	1	18,959
Florida	1	1	60,163
Georgia	3	3	86,517
Hawaii	1	1	27,197
Illinois	1	1	47,552
Indiana	1	1	16,143
Iowa	1	1	24,264
Kansas	1	1	44,309
Kentucky	1	1	20,772
Maine	2	2	23,950
Maryland	2	2	98,098
Massachusetts	4	6	228,913
Michigan	3	3	209,105
Minnesota	1	2	28,717
Mississippi	1	1	50,043
Missouri	3	4	129,466
Montana	2	2	54,678
Nebraska	1	1	27,056
New Jersey	1	1	32,416
New Mexico	1	1	32,142
New York	3	4	202,863
North Carolina	2	3	148,302
Ohio	3	3	74,935
Oklahoma	2	3	82,734
Oregon	1	3	211,732
Pennsylvania	2	2	61,208
Puerto Rico	1	1	5,862
South Carolina	1	1	63,749
South Dakota	1	1	38,465
Tennessee	1	1	48,698
Texas	5	6	323,610
Utah	1	1	38,190
Virginia	1	1	34,156
Washington	2	3	125,835
West Virginia	1	1	44,028
Wisconsin	2	6	286,221
40 States	69	84	$3,364,997

Active Training Grants 1968

40 States
69 Institutions and Agencies
87 Training Grants

WATER POLLUTION CONTROL

TRAINING GRANTS

FISCAL YEAR 1968

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
ARIZONA			
University of Arizona Tucson			
Mees, Quintin M. Dept. of Civil Engineering	Training in Water Management, Development and Reuse	5T1-WP-92-03 3T1-WP-92-03(S1)	26,867 594
ARKANSAS			
University of Arkansas Fayetteville		3T1-WP-85-03(S1)	2,878
Heiple, Loren R., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-85-04 3T1-WP-85-04(S1)	23,780 2,878
CALIFORNIA			
Sacramento State College Sacramento			
Kerri, Kenneth D., Ph.D. Dept. of Civil Engineering	The Development of a Pilot Correspondence School for Treatment Plant Operators	1TT1-WP-16-01	25,790
San Jose State College San Jose			
Agardy, Franklin J., Ph.D Dept. of Civil Engineering & Applied Mechanics	Sanitary Engineering Graduate Training Program	5T1-WP-198-01	16,049
Stanford University Stanford			
Eliassen, Rolf, Sc.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-38-06 3T1-WP-38-06(S1)	107,450 5,301
University of California Davis			
Biggar, James W., Ph.D. Dept. of Water Science & Engr.	Training in Water Supply and Pollution Control	5T1-WP-205-01	8,604
COLORADO			
University of Colorado Boulder			
Flack, J. Ernest, Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-105-03	44,709

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
COLORADO (Cont.)			
Colorado State University Fort Collins			
Morrison, S. M., Ph.D. Dept. of Microbiology	Training in Water Supply and Pollution Control	5T1-WP-127-03	49,049
DELAWARE			
Delaware State College Dover			
Seidel, George R., Ph.D. Dept. of Chemistry	Water Chemistry - Basic Theory and Methods	1TT1-WP-2-01	18,959
FLORIDA			
University of Florida Gainesville			
Kiker, John E., Jr. Dept. of Bioenvironmental Engr.	Water Pollution Control	5T1-WP-119-02 3T1-WP-119-02(S1)	59,080 1,083
GEORGIA			
Atlanta Area Technical School Atlanta			
Ferguson, Robert A. Dept. of Vocational-Technical and Adult Education	Water Quality Technology Training Program	1TT1-WP-22-01	11,561
Georgia Institute of Technology Atlanta			
Kindsvater, Carl E. Dept. of Water Resources Center	Training in Water Supply and Pollution Control	5T1-WP-62-05	45,850
Georgia State College Atlanta			
Parrish, Fred K., Ph.D. Dept. of Biology	Identification of Pollution Important Organisms	1TT1-WP-19-01	29,106
HAWAII			
University of Hawaii Honolulu			
Burbank, Nathan C., Sc.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-69-05	27,197

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
ILLINOIS			
University of Illinois Urbana			
Engelbrecht, Richard S., Ph.D. Dept. of Civil Engineering	Training in Water Quality and Pollution Control	5T1-WP-128-03	47,552
INDIANA			
Purdue University Lafayette			
Etzel, James E., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	2T1-WP-13-07	16,143
IOWA			
Iowa State University of Science and Technology Ames			
Baumann, E. Robert, Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-195-01	24,264
KANSAS			
University of Kansas Lawrence			
McKinney, Ross E., Sc.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	3T1-WP-50-04(S1) 5T1-WP-50-05	150 44,159
KENTUCKY			
University of Kentucky Lexington			
Lauderdale, Robert A., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-64-05	20,772
MAINE			
Southern Maine Vocational Technical Institute South Portland			
Coombs, Kenneth I. Dept. of Water and Waste Water Technology	Water Pollution - Special Technician Training Institute	1TT1-WP-23-01	7,656
University of Maine Orono			
Sproul, Otis J., Sc.D. Dept. of Civil Engineering	Water Supply and Pollution Control Training	5T1-WP-182-01	16,294

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
MARYLAND			
Charles County Community College La Plata			
Jensen, Belva L. Mrs. Dept. of Environmental Engineering Technology	Water Pollution Control Technician Curriculum Development	1TT1-WP-3-01	44,820
The Johns Hopkins University Baltimore			
Wolman, Markley G., Ph.D. Dept. of Environmental Engr. Science	Water Sciences and Management Program	5T1-WP-197-01	53,278
MASSACHUSETTS			
Harvard University Cambridge			
Morris, J. Carrell, Ph.D. Dept. of Engineering and Applied Physics	Summer Institute in Advanced Sanitary Chemistry	5T1-WP-133-02	13,033
Stumm, Werner, Ph.D. Dept. of Engineering and Applied Physics	Research Education in Aquatic Chemistry	1T1-WP-147-01A1	37,698
Northeastern University Boston			
Cochrane, John J., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-136-02	38,603
Tufts University Medford			
Hanes, Norman B., Ph.D. Dept. of Civil Engineering	Graduate Training for Environmental Engineering	5T1-WP-192-01	46,308
University of Massachusetts Amherst			
Feng, Tsuan Hua, Ph.D. Dept. of Civil Engineering	Water Supply and Pollution Control	5T1-WP-77-04	51,302
Litsky, Warren, Ph.D. Institute of Industrial and Agricultural Microbiology	Summer Water Pollution Institute for High School Teachers	1TT1-WP-12-01	41,969
MICHIGAN			
Michigan State University East Lansing			
Roelfs, Eugene W., Ph.D. Dept. of Fisheries and Wildlife	Graduate Training of Pollution Biologists	5T1-WP-109-03	45,050

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
MICHIGAN (Cont.)			
University of Michigan Ann Arbor			
Borchardt, Jack A., Ph.D. Dept. of Civil Engineering	Training Grant in Sanitary Engineering	1T1-WP-157-01	_______*
Craine, Lyle E., Ph.D. Dept. of Conservation	Integrated Program of Training in Water Resources	1T1-WP-177-01	131,280
Gannon, John J. Dept. of Environmental Health	Training in Water Resources and Pollution Control	2T1-WP-15-06	_______*
Smith, Frederick E., Ph.D. Dept. of Wildlife & Fisheries	Toxicology of Aquatic Organisms	2T1-WP-16-06	_______*
Wayne State University Detroit			
Dirasian, Henry A., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-101-02	32,775
MINNESOTA			
University of Minnesota Minneapolis			
Olson, Theodore A., Ph.D. Dept. of Public Health & Biology	USDI Training in Water Supply and Pollution Control	5T1-WP-95-03	14,659
Schroepfer, George J. Dept. of Civil Engineering	Sanitary Engineering and Water Resources Program	5T1-WP-191-01 3T1-WP-191-01(S1)	8,524 5,534
MISSISSIPPI			
Mississippi State University State College			
Williford, Howard K. Dept. of Civil Engineering	Waste Water Disposal Engineering Training Program	5T1-WP-108-03	50,043
MISSOURI			
University of Missouri Columbia			
Ray, Arliss D., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-30-05	45,500
University of Missouri Rolla			
Grigoropoulos, S. G., Sc.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-86-03	33,839

*Active 1968 - Supported by funds awarded in previous years

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO	AMOUNT
MISSOURI (Cont.)			
Water & Wastewater Technical School Neosho			
Caughran, Ira L. Dept. of Water and Wastewater	Development of Industrial Waste Training	1TT1-WP-8-01	17,727
Caughran, Ira L. Dept. of Water and Wastewater	Establishment of Water and Wastewater Training Institutions	1TT1-WP-17-01	32,400
MONTANA			
Montana State University Bozeman			
Wright, John D., Ph.D. Dept of Botany & Microbiology	Physics, Chemistry and Biology of Water Quality	5T1-WP-180-01	36,318
University of Montana Missoula			
Gaufin, Arden R., Ph.D. Dept. of Zoology	Water Supply and Water Pollution Biology	2T1-WP-200-01	16,360
NEBRASKA			
University of Nebraska Lincoln			
Hammer, Mark J., Ph.D. Dept. of Civil Engineering	Sanitary Engineering	1T1-WP-120-01A1	27,056
NEW JERSEY			
Rutgers The State University New Brunswick			
Kaplovsky, A. Joel, Ph.D. Dept. of Environmental Sciences	Training in Water Supply and Pollution Control	1T1-WP-163-01 3T1-WP-163-01(S1)	19,780 12,636
NEW MEXICO			
New Mexico State University Las Cruces			
Clark, John W. Dept. of Civil Engineering	Water Quality Management	5T1-WP-196-01	32,142
NEW YORK			
Cornell University Ithaca			
Gates, Charles D. Dept. of Water Resources Engr.	Water Quality Control Engineering	1T1-WP-172-01	21,287

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
NEW YORK (Cont.)			
Manhattan College Bronx			
Jeris, John S., Sc.D. Dept. of Civil Engineering	Training of Engineers in Water Pollution Control	5T1-WP-188-01 3T1-WP-188-01(S1)	72,520 9,810
O'Connor, Donald J. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-190-01	15,192
New York University New York			
Molof, Alan H., Ph.D. Dept. of Civil Engineering	Water Supply and Water Pollution Control Engineering	5T1-WP-186-01	84,054
NORTH CAROLINA			
North Carolina State University Raleigh			
Smallwood, Charles M., Ph.D. Dept. of Civil Engineering	Water Supply and Pollution Control	3T1-WP-68-04(S1) 5T1-WP-68-05	7,514 21,692
Smallwood, Charles M., Ph.D. Dept. of Civil Engineering	Industrial Waste Control and Abatement	1T1-WP-165-01	71,148
University of North Carolina Chapel Hill			
Weiss, Charles M., Ph.D. Dept. of Environmental Sciences and Engineering	Graduate Training in Water Quality Management	1T1-WP-173-01 3T1-WP-173-01(S1)	33,800 14,148
OHIO			
Ohio State University Columbus			
Dambach, Charles A., Ph.D. Natural Resources Institute	Training in Water Supply and Pollution Control	5T1-WP-39-05	20,934
University of Cincinnati Cincinnati			
Eye, J. David, Sc.D. Dept. of Civil Engineering	Training in Water Supply and Water Pollution Control	5T1-WP-46-05	34,239
University of Toledo Toledo			
Bennett, Gary F., Ph.D. Dept. of Chemical Engineering	Bioengineering Training in Water Pollution Control	5T1-WP-94-03	19,762

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
OKLAHOMA			
Oklahoma State University Stillwater			
Dorris, Troy C., Ph.D. Dept. of Zoology	Aquatic Ecology Specialists in Water Pollution	5T1-WP-185-01	33,324
Gaudy, A. F., Jr., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	2T1-WP-19-07	21,852
University of Oklahoma Norman			
Reid, George W. Dept. of Civil and Environmental Sciences	Water Resources Development	5T1-WP-189-01	27,558
OREGON			
Oregon State University Corvallis			
Burgess, Frederick J. Dept. of Civil Engineering	Graduate Training in Water Quality Engineering	5T1-WP-187-01	78,220
Curl, Herbert C., Jr., Ph.D. Dept. of Oceanography	Training in Water Supply and Pollution Control	5T1-WP-111-03	108,002
Warren, Charles E., Ph.D. Dept. of Fisheries and Wildlife	Training in Freshwater and Marine Pollution Biology	5T1-WP-208-01	25,510
PENNSYLVANIA			
Drexel Institute of Technology Philadelphia			
Strandberg, William B., Ph.D. Dept. of Environmental Engr. and Science	Training in Water Quality Management and Control	1T1-WP-125-01A1	29,902
University of Pittsburgh Pittsburgh			
Tryon, C. A., Ph.D. Pymatuning Lab. of Field Biology	Graduate Training in Aquatic Ecology	5T1-WP-83-03	31,306
PUERTO RICO			
University of Puerto Rico Myaguez			
Melendez, Miguel Santiago, Ph.D. Dept. of Civil Engineering	Water Pollution Control Technician Training Institute	1TT1-WP-25-01	5,862

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
SOUTH CAROLINA			
Clemson University Clemson			
Rich, Linvil G., Ph.D. Dept. of Environmental Systems Engineering	Teaching in Process Engineering	5T1-WP-181-01 3T1-WP-181-01(S1)	59,769 3,980
SOUTH DAKOTA			
South Dakota State University Brookings			
Dornbush, James N., D. Sc. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-93-04	38,465
TENNESSEE			
Vanderbilt University Nashville			
Krenkel, Peter A., Ph.D. Dept. of Sanitary and Water Resources Engineering	Water Resources and Environmental Health Engineering	5T1-WP-201-01	48,698
TEXAS			
James Connally Technical Institute Waco			
Lancaster, D. L. Dept. of Water and Waste Water Technology	Water Pollution Control Technician Training	1TT1-WP-21-01	10,350
North Texas State University Denton			
Silvey, Joseph K. G., Ph.D. Dept. of Biology	Training in Water Supply and Pollution Control	5T1-WP-107-03	26,189
Texas A&M University College Station			
Davis, William B., Sc.D. Dept. of Civil Engineering	Petrochemical Waste Abatement	5T1-WP-74-05	95,790
University of Texas Austin			
Gloyna, Earnest F., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-183-01	81,057
Eckenfelder, W. Wesley, Jr. Dept. of Water Resources	Development of Instruction Material for Industrial Wastewater Treatment Training	1TT1-WP-4-01	53,676
William Marsh Rice University Houston			
Busch, Arthur W. Dept. of Environmental Science and Engineering	Training in Water Supply and Pollution Control	5T1-WP-194-01 3T1-WP-194-01(S1)	46,504 10,044

LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT
UTAH			
Utah State University Logan			
Jones, Norman B. Dept. of Civil Engineering	Interdisciplinary Training Program in Water Quality	1T1-WP-153-01A1	38,190
VIRGINIA			
Virginia Polytechnic Institute Blacksburg			
King, Paul H., Ph.D. Dept. of Civil Engineering	Water Resources Management and Quality Control	1T1-WP-166-01	34,156
WASHINGTON			
University of Washington Seattle			
Brown, George W., Jr., Ph.D. Dept. of Fisheries	Biological Effects of Water Pollution	1T1-WP-175-01	35,168
Sylvester, Robert O. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-122-03 3T1-WP-122-03(S1)	62,606 3,305
Washington State University Pullman			
Dunstan, Gilbert H. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	1T1-WP-170-01	24,756
WEST VIRGINIA			
West Virginia University Morgantown			
Burchinal, Jerry C. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	3T1-WP-72-04(S2) 5T1-WP-72-05	600 43,428
WISCONSIN			
Marquette University Milwaukee			
Kipp, Raymond J., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-129-02	19,872
University of Wisconsin Madison			
Chesters, Gordon, Ph.D. Dept. of Soils	Soil and Water Sanitation	1T1-WP-100-01A1	53,110
Clarenbach, Fred A., Ph.D. Dept. of Geology & Geophysics	Water Resources Management	5T1-WP-60-05	63,287
Hasler, Arthur D., Ph.D. Dept. of Zoology	Biological Aspects of Water Resource Management	5T1-WP-204-01	44,797

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LOCATION AND PROGRAM DIRECTOR	PROGRAM TITLE	GRANT NO.	AMOUNT	AMOUNT
WISCONSIN (Cont.)				
University of Wisconsin Madison				
Lee, G. Fred, Ph.D. Dept. of Civil Engineering	Chemistry of Water Supply and Pollution Control	5T1-WP-184-01 3T1-WP-184-01(S1)		67,756 8,640
Polkowski, Lawrence B., Ph.D. Dept. of Civil Engineering	Training in Water Supply and Pollution Control	5T1-WP-132-03		28,759

RESEARCH FELLOWSHIPS FISCAL YEAR 1968

SUMMARY OF AWARDS BY STATES

State	Institutions and Agencies	Number Awarded	Amount Awarded
Arkansas	1	0	0
California	3	4	16,418
Colorado	2	1	4,945
Florida	1	1	6,100
Georgia	2	0	0
Idaho	1	2	11,940
Indiana	1	1	12,049
Iowa	2	7	37,858
Kansas	1	1	2,517
Louisiana	1	1	4,900
Maryland	1	0	0
Massachusetts	3	4	31,200
Michigan	3	20	91,651
Missouri	2	2	11,600
Montana	1	2	11,935
New Hampshire	1	2	11,108
New Mexico	1	1	6,300
New York	3	13	74,586
North Carolina	1	3	18,120
Ohio	1	1	12,432
Oklahoma	2	2	5,611
Oregon	1	4	30,600
Pennsylvania	1	0	0
South Carolina	1	8	44,902
Texas	3	2	17,431
Utah	2	6	39,700
Washington	1	3	9,483
Wisconsin	1	18	109,200
Foreign	4	4	10,405
28 States	48	113	632,991

Active Research Fellowships 1968

28 States   4 Foreign Countries
48 Institutions and Agencies
155 Research Fellowships

WATER POLLUTION CONTROL

RESEARCH FELLOWSHIPS

FISCAL YEAR 1968

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
ARKANSAS			
University of Arkansas Fayetteville			
Owen, Ray Dept. of Civil Engineering	Waste Treatment Prediction Using Computers	1-F1-WP-35,936-01	*
CALIFORNIA			
Stanford University Stanford			
Atkins, Patrick R. Dept. of Civil Engineering	Rain-out Washout Processes Applied to Lead Aerosols	5-F1-WP-33,496-02	418**
Downs, Charles, E. Dept. of Civil Engineering	Radioisotope Training in W.S. and P.C. Nuclear Hydrology	1-F1-WP-26,323-01	10,400
Foree, Edward G. Dept. of Civil Engineering	Decomposition of Algae in Natural Anaerobic Waters	5-F1-WP-26,177-02	*
Haskell, Broderick P. Department of Civil Engineering	Secondary Benefits Evaluation Derived from Water Pollution abatement	2-F3-WP-26,102-02	*
Huff, Dale D. Dept. of Civil Engineering	Rainfall Deposition of Radioactive Fallout in Water Supplies	5-F1-WP-26,022-02	*
Linstedt, Kermit D. Dept. of Civil Engineering	Vanadium Removal in Water Treatment Coagulation	5-F1-WP-22,084-04	*
Yount, James C. Dept. of Civil Engineering	The Anaerobic Filter for Waste Treatment	5-F1-WP-28,715-02	*
University of California Berkeley			
Cordes, Ronald A. Dept. of Chemical Engineering	Filtration of Aqueous Effluents Carrying Emulsified Oils	1-F1-WP-26,276-01	5,100

**Supply, travel or dependent allowance

* Active 1968 - Supported by funds awarded in previous years

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
CALIFORNIA			
University of California Berkeley			
Middlebrooks, Eddie J. Dept. of Civil Engineering	Kinetics of Biological Systems	1-F3-WP-26,205-01	$ 500**
COLORADO			
Colorado State University Fort Collins			
Peters, John C. Dept. of Fishery & Wildlife	Effects of Sedimentation on a Trout Stream	1-F1-WP-26,268-01	4,945
Wendt, Theodore M. Dept. of Pathology and Microbiology	Urease Positive Bacteria and their Relation to Water Pollution	5-F1-WP-26,114-02	_______*
University of Colorado Boulder			
Lavelle, James W. Dept. of Biology	Primary Productivity of the Arkansas River in the Vicinity of Pueblo, Colorado	5-F1-WP-26,101-02	_______*
Young, Willard C. Dept. of Biology	The Hydracarina of Colorado and their Distribution as Related to Altitude and Water Chemistry	5-F1-WP-26,062-02	_______*
FLORIDA			
Florida State University Tallahassee			
Housley, Carl B. Dept. of Economics	An Economic Evaluation of Water Laws	1-F1-WP-26,277-01	6,100
GEORGIA			
Emory University Atlanta			
Mozley, Samuel Dept. of Biology	Ecology of Chironomid Species in a Small Lake	1-F1-WP-37,227-01	_______*
University of Georgia Athens			
Todd, Russell L. Dept. of Bacteriology	Bacterial Decomposition of Detergents in Sewage	5-F1-WP-21,402-03	_______*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
IDAHO			
University of Idaho Moscow			
Lank, John C. Dept. of Civil Engineering	The Effects of Accumulated Decomposition Products on Rates of Biological Treatment of Organic Wastes	1-F1-WP-26,295-01	6,040
Siddoway, Dean W. Dept. of Chemical Engineering	Mechanisms of Potato Waste Degradation	1-F1-WP-26,282-01	5,900
INDIANA			
Purdue University Lafayette			
Rollag, Dwayne A. Dept. of Civil Engineering	Anaerobic Pre-treatment for Aerobic Treatment Systems	1-F3-WP-26,312-01	12,049
IOWA			
Iowa State University Ames			
Bacon, Dale L. Dept. of Civil Engineering	Bio-flocculation in the Anaerobic Contact Process	1-F1-WP-26,332-01	4,900
Bridges, Harold R. Dept. of Civil Engineering	Diatomite Filter Cake Resistance for Surface Waters	5-F1-WP-26,104-03 5-F1-WP-26,104-04	5,100 5,300
Burns, Donald E. Dept. of Civil Engineering	Removal of Particulate Matter on Coated Filter Media	5-F1-WP-26,003-03	________ *
Raschke, Ronald L. Dept. of Botany & Plant Pathology	Algal Productivity and Waste Reclamation in a Sewage Stabilization Pond	5-F1-WP-26,064-03	6,800
Sedgwick, Stephen R. Dept. of Civil Engineering	Biological Treatment of Adsorbed Refractories	5-F1-WP-26,242-02	6,558
Wildman, Ruth B. Dept. of Botany	The Biochemistry of the Blue-green Algae	5-F1-WP-37,930-02	5,300

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
IOWA			
University of Iowa Iowa City			
Bright, David F. Dept. of Civil Engineering	Water or Wastewater Treatment Process Analysis	1-F1-WP-37,089-01	*
Lampe, Wallace D. Dept. of Civil Engineering	Biological Flocculation in Activated Sludge	5-F1-WP-33,656-03	3,900
KANSAS			
Kansas State University Manhattan			
Fox, Charles L. Dept. of Chemistry	Properties and Structure of Metal EDTA Complexes	5-F1-WP-26,202-02	2,517
LOUISIANA			
Northwestern State Natchitoches			
Brown, Ellison E. Dept. of Biological Sciences	Effects of Pollution on Benthis Macroinvertebrates	1-F1-WP-216-01	*
Damico, Sam A. Dept. of Biological Sciences	Effect of Treated Sewage Effluent on Primary Production	1-F1-WP-26,322-01	4,900
MARYLAND			
Johns Hopkins University Baltimore			
Meyers, Caldwell D. Dept. of Environmental Engineering Science	Responses of the White Perch to Temperature and O_2	1-F1-WP-26,198-01A1	*
Schubel, Jerry R. Dept. of Oceanography	Sedimentation and Mineral Assemblages in Estuaries	5-F1-WP-23,785-03	*
MASSACHUSETTS			
Harvard University Cambridge			
Chi, Tze-wen Dept. of Civil Engineering	Analysis of a Waste Water Transportation System for the Penjerdel Megaloplis	1-F1-WP-26,303-01	6,800

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
MASSACHUSETTS			
Harvard University Cambridge			
Murdoch, David M. Graduate School of Business Administration	Financing Water Supply and Pollution Control Projects	1-F3-WP-26,258-01	13,000
Schaake, John C. Dept. of Environmental Sciences and Engineering	Economic Aspects of Management	1-F2-WP-26,108-01	*
Tihansky, Dennis P. Dept. of Engineering & Applied Physics	Models of Environmental Health and Economic Growth	1-F1-WP-26,285-01	5,100
Massachusetts Institute of Technology Cambridge			
Matson, Wayne R. Dept. of Chemistry	Lead Geochemistry in an Urban Environment	5-F1-WP-31,180-02	*
University of Massachusetts Amherst			
Saines, Marvin Dept. of Geology	Hydrology Induced Infiltration	5-F1-WP-26,229-02	6,300
MICHIGAN			
Michigan State University East Lansing			
Bahr, Thomas G. Dept. of Fisheries & Wildlife	Effects of Sublethal Pesticide Stress Upon Fish	4-F1-WP-26,004-05	2,900
Fast, Arlo W. Dept. of Fisheries & Wildlife	Effects of Artificial Destratification on Lake Ecology	1-F1-WP-26,292-01	5,752
Garton, Ronald R. Dept. of Fisheries & Wildlife	Metallic Ion Pollution in a Warm-Water Stream	5-F1-WP-26,008-04	*
Haines, Terry A. Dept. of Fisheries & Wildlife	Some Effects of Water Pollution on Fish Populations	5-F1-WP-26,225-02	5,100
Jackson, Dennis Dept. of Botany and Plant Pathology	The Taxonomy and Ecological Distribution of the Desmidiaceae in Montana	1-F1-WP-26,081-01A1	*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
MICHIGAN			
Michigan State University East Lansing			
Jensen, Alvin L. Dept. of Fisheries & Wildlife	Effect of Organic Pollution on Energy Transfer of Microbes in a Stream Ecosystem	5-F1-WP-26,154-03	2,650
Lenon, Herbert L. Dept. of Fisheries & Wildlife	Transfer of the Insecticide Dielfrin Through Trophic Levels	5-F1-WP-29,109-03	*
Sohacki, Leonard P. Dept. of Fisheries & Wildlife	Movement of Sodium Arsenite in a Pond Ecosystem	5-F1-WP-25,711-04	2,575
Michigan State University Hickory Corners			
Miller, Michael C. Dept. of Botany	Organic Excretion and Hetertrophy within a Plankton Community	5-F1-WP-37,449-02	5,990
University of Michigan Ann Arbor			
Atkins, Peter F. Dept. of Civil Engineering	Kinetics and Uptake of Nitrogen and Phosphates by Ion Exchange	5-F1-WP-26,174-02	5,350
Brockway, Donald L. Dept. of Fisheries & Wildlife	Release Effects of Tissue Stored Dieldrin in Fishes	2-F1-WP-34,286-02	*
DiGiano, Francis A. Dept. of Civil Engineering	Activated Carbon Adsorption in Heterogeneous Systems	5-F1-WP-26,176-02	6,100
Foess, Gerald W. Dept. of Civil Engineering	The Sand Filtration of Algae Suspensions	5-F1-WP-26,036-04	5,800 400**
Jordan, Robert A. Dept. of Environmental Health	Algal Nutrition in Relation to Eutrophication	1-F1-WP-26,294-01	5,100
Keinath, Thomas M. Dept.of Civil Engineering	Kinetics of Adsorption in Columns of Fluidized Media	5-F1-WP-24,505-04	*
Leland, Harry V. Dept. of Fisheries & Wildlife	Structure-Toxicity of M. Parathion Analogs to Fishes	5-F1-WP-26,240-02	1,967
Life, Jeffry S. Dept. of Zoology	Histopathological Responses of Fish Chronically Exposed to Sublethal Levels of Heavy Metal Pollutants	1-F1-WP-26,315-01	7,300

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
MICHIGAN			
University of Michigan Ann Arbor			
Meier, Peter G. Dept. of Environmental Health	Photosynthetic Oxygen Relationships in Channels	1-F1-WP-26,296-01	5,800
Midkiff, William S. Dept. of Civil Engineering	Fluidized-ion Exchange Column	5-F1-WP-26,227-02	5,800
Pohland, Frederick Dept. of Environmental Health	Study and Research in Water Resources Sciences	1-F3-WP-37,035-01	500**
Schenk, John Dept. of Civil Engineering	Silica Interaction with Trace Metals	5-F1-WP-26,034-04	5,367
Schimpff, Warren K. Dept. of Environmental Health	Ion-Specific, Ion-Exchange Membrane Electrodes	1-F1-WP-26,298-01	5,800
Sharpin, Ronald E. Dept. of Environmental Health	Reaer Coeff's Relationship to longitudual mixing and roughness	1-F1-WP-26,299-01	6,100
Winklehaus, Charles Dept. of Civil Engineering	Phosphate Stripping from Waste Waters	5-F1-WP-26,231-02	5,300
MISSOURI			
University of Missouri Columbia			
Hoehn, Robert C. Dept. of Civil Engineering	Biological Degradation of Organics Adsorbed on Activated Carbon	5-F1-WP-26,150-03	6,300
Washington University St. Louis			
Smith, James E. Dept. of Civil and Environmental Engineering	Control of Activated Sludge Bulking with Heavy Metals	5-F1-WP-26,249-02	5,300
MONTANA			
University of Montana Missoula			
Morgan, Garth R. Dept. of Zoology	The Fate of Mineral Nutrients in Flathead Lake, Montana	5-F1-WP-26,212-02	6,600
Sonstelie, Lawrence C. Dept. of Zoology	Effects of DDT Application on Stream Insects	1-F1-WP-26,319-01	5,335

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
WISCONSIN			
University of Wisconsin Madison			
TeKippe, Rudy J. Dept. of Civil Engineering	Application of Flocculation Theories	1-F1-WP-26,100-01A2	6,600
Tranquillo, James S. Dept. of Civil Engineering	Septic Tanks as a Source of Phosphorus for Lakes	5-F1-WP-26,329-01	10,400
Walesh, Stuart G. Dept. of Civil Engineering	Subsurface Water Movement	5-F1-WP-26,072-03	______*
Walton, Craig P. Dept. of Civil Engineering	Microhabitats of Indicator Organisms	1-F1-WP-26,330-01	5,900
FOREIGN			
ENGLAND			
Westfield College London, England			
Jewell, William J. Dept. of Botany	Algae and Sessile Plant Degradation in Waterways	1-F2-WP-33,693-01S1	1,250
Freshwater Biological Association Ambleside			
Stockner, John G. Dept. of Chemistry	Lake Sediments Study	1-F2-WP-26,042-01	______*
SWEDEN			
Chalmers University of Technology Goteborg, Sweden			
Kirk, Thomas K. Dept. of Organic Chemistry	Use of Hymenomycetes to Decompose Waste Lignin	1-F2-WP-26,273-01	8,155 500**
SWITZERLAND			
Swiss Federal Institute of Technology Zurich			
Washington, Donald R. Biological Section	Effects of Algae on Stream Oxygen Balance	1-F3-WP-7935-01	500**

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
WISCONSIN			
University of Wisconsin Madison			
Gardner, Wayne S. Dept. of Civil Engineering	Amino Acids in Natural Water Systems	5-F1-WP-26,224-02	6,100
Hazelwood, Loren F. Dept. of Water Chemistry	Electrolytic Treatment of Cyanide Wastes	1-F1-WP-26,304-01	5,100
Hughes, Robert A. Dept. of Civil Engineering	Persistence of Toxaphene in Natural Waters	5-F1-WP-26,196-02	6,600
Jebens, Harold J. Dept. of Civil Engineering	Nitrogen Transformation in Streams	1-F1-WP-26,311-01	6,300
Carr, Malcolm H. Dept. of Urban and Regional Planning	Water Resources Management	1-F3-WP-26,167-01	________ *
Klossner, John W. Dept. of Civil Engineering	Studies on the Effect of Pulp and Paper Pollution of Wisconsin River	1-F1-WP-26,310-01	6,600
Koonce, Joseph F. Dept. of Zoology	Biological Investigations on Polluted Impoundments	1-F1-WP-26,279-01	5,400
Peterson, James O. Dept. of Civil Engineering	Concentration of Organics	5-F1-WP-26,183-03	4,400
Plumb, Russell H. Dept. of Civil Engineering	Chlorination of Cyanide Planting Wastes	1-F1-WP-26,316-01	5,100
Rees, Colin P. Dept. of Zoology	Two Factors Influencing the Distribution of Gammarus Pseudolimnaeus	5-F1-WP-36,364-02	5,300
Rodel, Max G. Dept. of Civil Engineering	Characterization of Algal Odors	1-F1-WP-26,317-01	5,300
Shannon, James E. Dept. of Civil Engineering	Estimating Eutrophication of Lakes by Sediment Cores	5-F1-WP-26,012-04	6,800
Spear, Richard D. Dept. of Chemistry	Chemistry of Glycollic Acid in Natural Waters	5-F1-WP-26,020-03	________ *

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
WASHINGTON			
University of Washington Seattle			
Stockner, John G. Dept. of Zoology	Ecology of Thermal Springs	5-F1-WP-26,042-03	———*
Woelke, Charles E. Dept. of Fisheries	Bioassay Study of Fertilized Oyster Eggs in Puget Sound	5-F1-WP-26,014-04	2,683
WISCONSIN			
University of Wisconsin Madison			
Baillod, Charles Dept. of Civil Engineering	Mass Transfer of Nutrients Through Bacterial Floc	5-F1-WP-24,612-02	———*
Bentley, Eugene M. Dept. of Civil Engineering	Effect of Marshes on Water Quality	5-F1-WP-26,189-02	6,800
Berthouex, Paul M. Dept. of Civil Engineering	Optimum Waste Treatment System Design	1-F1-WP-26,306-01	5,800
Biggar, James W. Dept. of Soils	Mixing Process in Soil in Relation to Waste Control	1-F1-WP-28,715-01	———*
Bortleson, Gilbert C. Dept. of Civil Engineering	Eutrophication-Lake Sediment Cores	1-F1-WP-26,188-01A2	5,600
Boucher, Francis R. Dept. of Civil Engineering	Chlorinated Pesticides in Natural Water	5-F1-WP-26,137-02	———*
Cole, Jon A. Dept. of Civil Engineering	General Area of Physical Thickening of Sludges from Biological Waste Treatment	5-F1-WP-28,270-03	———*
Cowen, William F. Dept. of Civil Engineering	Effect of Organics on Growth of Algae	5-F1-WP-26,207-02	5,100
Delfino, Joseph J. Dept. of Civil Engineering	Aqueous Environmental Chemistry of Manganese	1-F1-WP-26,217-01	———*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
TEXAS			
University of Texas Port Aransas			
Steed, David L. Dept. of Marine Science Institute	Carbon Metabolism of an Estuarine Ecosystem	5-F1-WP-26,209-02	5,300
UTAH			
University of Utah Salt Lake City			
Hales, Donald C. Dept. of Zoology	Effects of Insecticides on a Stream Environment	5-F1-WP-26,025-03	——*
Jacobi, Gerald Z. Dept. of Zoology and Entomology	A New Artificial Substrate for Pollution Surveillance	1-F1-WP-26,325-01	5,100
Merkley, Wayne B. Dept. of Zoology	Evaluation of Nematodes in Water Treatment Plant	5-F1-WP-26,016-04 5-F1-WP-26,016-05	6,600 7,300
Prows, Bernard L. Dept. of Zoology and Entomology	Bioassays to Determine the Toxicity of Pesticides to Aquatic Insects	5-F1-WP-26,130-03	8,300
Utah State University Logan			
Beers, Gary D. Dept. of Wildlife Resources	Algal and Sphaerotilus Production in a Polluted River	5-F1-WP-33,276-02	5,800
Mayer, Foster L. Dept. of Wildlife Resources	Insecticide Interaction Effects on Fish Metabolism	5-F1-WP-31,575-02	6,600
WASHINGTON			
University of Washington Seattle			
Abernathy, Atwell R. Dept. of Zoology	Limnological Study of Recovery of Lake Washington	1-F3-WP-26,213-01	500**
Gotelli, David M. Dept. of Botany	Fungal Parasites of the Phytoplankton	5-F1-WP-26,248-02	6,300

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
SOUTH CAROLINA			
Clemson University Clemson			
Cannella, Albert A. Dept. of Environmental Systems Engineering	Chemical Aspects of Waste Treatment	5-F1-WP-30,617-02	____________*
Click, Clifford Dept. of Chemical Engineering	Growth Kinetics of Algae	5-F1-WP-29,884-03	7,300
Cline, David M. Dept. of Environmental Systems Engineering	Population Dynamics in Surface Attached Microorganisms	1-F1-WP-26,287-01	5,600
Holland, Lyman L. Dept. of Chemical Engineering	The Kinetics of an Algal Photosynthetic Gas Exchanger	5-F1-WP-26,173-02S1 5-F1-WP-26,173-03	202** 2,900
Stokley, Dave R. Dept. of Chemical Engineering	The Rate and Composition of Gases Evolved in a Lagoon	1-F1-WP-26,328-01	4,900
Weers, Walter A. Dept. of Environmental Systems Engineering	Multi-Stage-Pluri-Stream Continuous Culture of Microorganisms	5-F1-WP-26,243-02	6,800
Wrenn, John D. Dept. of Chemical Engineering	The Effect of Light Source on Chlorophyll in Algae	5-F1-WP-26,181-03	5,800
Young, Thomas B. Dept. of Environmental Systems Engineering	Analysis of a Pure Continuous Culture	1-F1-WP-26,331-01	11,400
TEXAS			
Texas A & M University College Station			
Evett, Jack B. Dept. of Civil Engineering	Waste Assimilation Capacity in Non-Steady Rivers	5-F1-WP-23,068-03	____________*
University of Texas Austin			
Lindsey, Edgar E. College of Engineering	Chemical and Environmental Engineering	1-F3-WP-26,255-01	12,131

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
OKLAHOMA			
Oklahoma University Norman			
Engelken, Walter Dept. of Civil Engineering and Environmental Science	Ionic Buffer Capacity of High Surface Area Materials	1-F1-WP-26,233-01S1	311**
Oklahoma State University Stillwater			
Grady, C. P. Leslie Dept. of Civil Engineering	Metabolic Control in Multicomponent Systems	5-F1-WP-16,744-04	5,300
OREGON			
Oregon State University Corvallis			
Bolen, John J. Dept. of Oceanography	Marine Radioecology	1-F1-WP-26,321-01	12,400
Gillespie, Paul A. Dept. of Microbiology	Sediment-Water-Bacteria	1-F1-WP-26,289-01	5,100
Haertel, Lois J. Dept. of Oceanography	Relationships Between Columbia River Estuary Plankton, Radionuclides and Wood Fibers	5-F1-WP-31,471-02	__________*
Holton, Robert L. Dept. of Oceanography	Radiosensitivity of Marine Organisms	5-F1-WP-30,166-03	__________*
McCain, Bruce B. Dept. of Microbiology	The Characterization of a Sockeye Salmon Virus	5-F1-WP-26,157-03	5,800
Robertson, James M. Dept. of Microbiology	A Physiological Ecological Study of Sphaerotilus Natans in an Experimental Stream	5-F1-WP-26,040-02	__________*
Williams, Harvey D. Dept. of Botany and Plant Pathology	Kraft Pulp Effluent Effects on Algae in Streams	5-F1-WP-26,159-02	7,300
PENNSYLVANIA			
Pennsylvania State University University Park			
Eberhardt, William A. Dept. of Civil Engineering	Anaerobic Biological Waste Treatment	5-F1-WP-26,021-03	__________*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
NEW YORK			
Cornell University Ithaca			
Skelly, Michael Dept. of Sanitary Engineering	Optimal Process Design for Multiple Waste Components	1-F1-WP-33,749-01A1	*
Stensel, H. David Dept. of Water Resources Engineering	Optimization of Wastewater Treatment Process	1-F1-WP-26,284-01	5,600
Verma, Rameshwar D. Dept. of Water Resources Engineering	Nonlinear Model for Predicting Extreme Runoff	1-F1-WP-26,266-01	8,100
Wanielista, Martin P. Dept. of Water Resources Engineering	Optimal Location and Evaluation of Surveillance Nets	1-F1-WP-33, 751-01A1	*
New York University University Heights			
Blanc, Matthew M. Dept. of Civil Engineering	Control of Electrode Potentials in Digestion	1-F1-WP-26,251-01	5,300
Zuckerman, Matthew M. Dept. of Civil Engineering	Secondary Effluent Suitability for Carbon Treatment	1-F1-WP-26,253-01	5,600 500**
NORTH CAROLINA			
North Carolina State University Raleigh			
Byron, Michael M. Dept. of Zoology	Movement of Dissolved Organics in Estuarine Environment	1-F1-WP-26,275-01	5,400
Engel, David W. Dept. of Zoology	Effects of Environmental Factors of Marine Crustacea	1-F1-WP-26,269-01	6,610
Hoss, Donald E. Dept. of Zoology	Metabolic Rates of Estuarinel Fish	1-F1-WP-26,271-01	6,110
OHIO			
University of Cincinnati Cincinnati			
Pappas, James M. Dept. of Civil Engineering	Urban Runoff Characteristics	1-F1-WP-26,326-01	12,432

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
NEW HAMPSHIRE			
University of New Hampshire Durham			
Gallup, Donald N. Dept. of Zoology	Zoo-Nannoplankton Relationship in a Mesotrophic Lake	5-F1-WP-26,218-02	5,008
McGill, Hugh J. Dept. of Zoology	Algal Blooms in Eutrophic Waters	1-F1-WP-26,265-01	6,100
NEW MEXICO			
New Mexico State University Las Cruces			
Kramer, Gary R. Dept. of Civil Engineering	Mathematical Model of the Transition State	5-F1-WP-26,220-02	6,300
NEW YORK			
Clarkson College of Technology Potsdam			
Andros, Peter J. Dept. of Civil Engineering	A Water Renovation Process for Virus Removal	1-F1-WP-26,270-01	4,900
Cornell University Ithaca			
Alexander, Martin Dept. of Agronomy	Biochemical Ecology of Microorganisms	1-F3-WP-26,260-01	13,800
Arnold, Dean E. Dept. of Ecology and Systematics	Effects of the Blue-Green Algae on Zooplankton	1-F1-WP-26,214-01S1 5-F1-WP-36,214-02	386** 6,300
Gablinger, Moshe Water Resources Engineering	Application of Operations Research to Water Management	1-F1-WP-26,262-01	6,600
Grove, Thurman L. Dept. of Ecology and Systematics	Population Dynamics and Seasonal Metabolism of Zooplankton	1-F1-WP-26,314-01	5,800
Milnes, Thomas R. Dept. of Water Resources Engineering	Use of Systems Analysis in Water Pollution Control	1-F1-WP-26,264-01	6,600
O'Brien, William J. Dept. of Ecology and Systematics	Plankton Succession in Artificially Fertilized Ponds	1-F1-WP-26,280-01	5,100

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